FIG.1

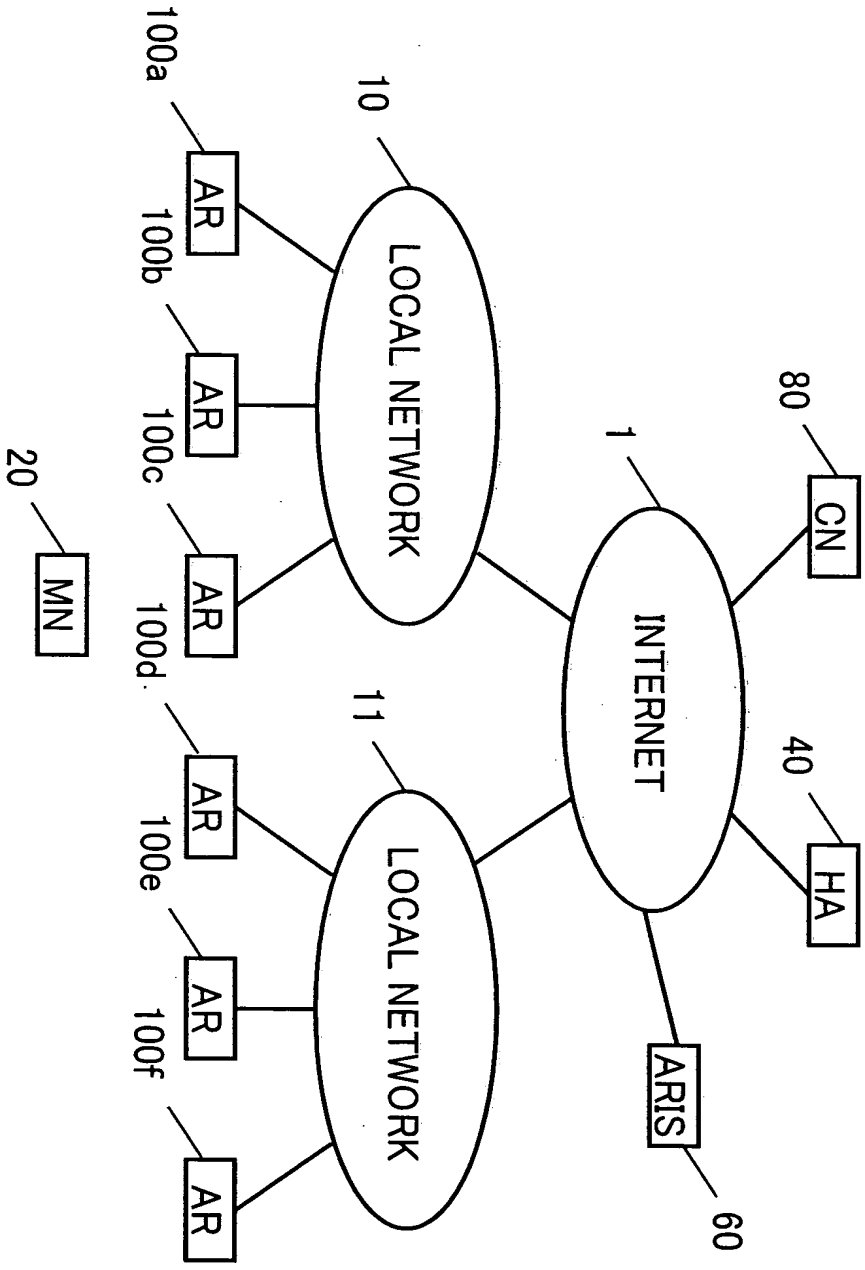

100a
AR
100b
AR
100c
AR
100d
AR
10
LOCAL NETWORK
20
MN
1
INTERNET
80
CN
40
HA
60
ARIS
11
LOCAL NETWORK
100e
AR
100f
AR
AR

FIG.2

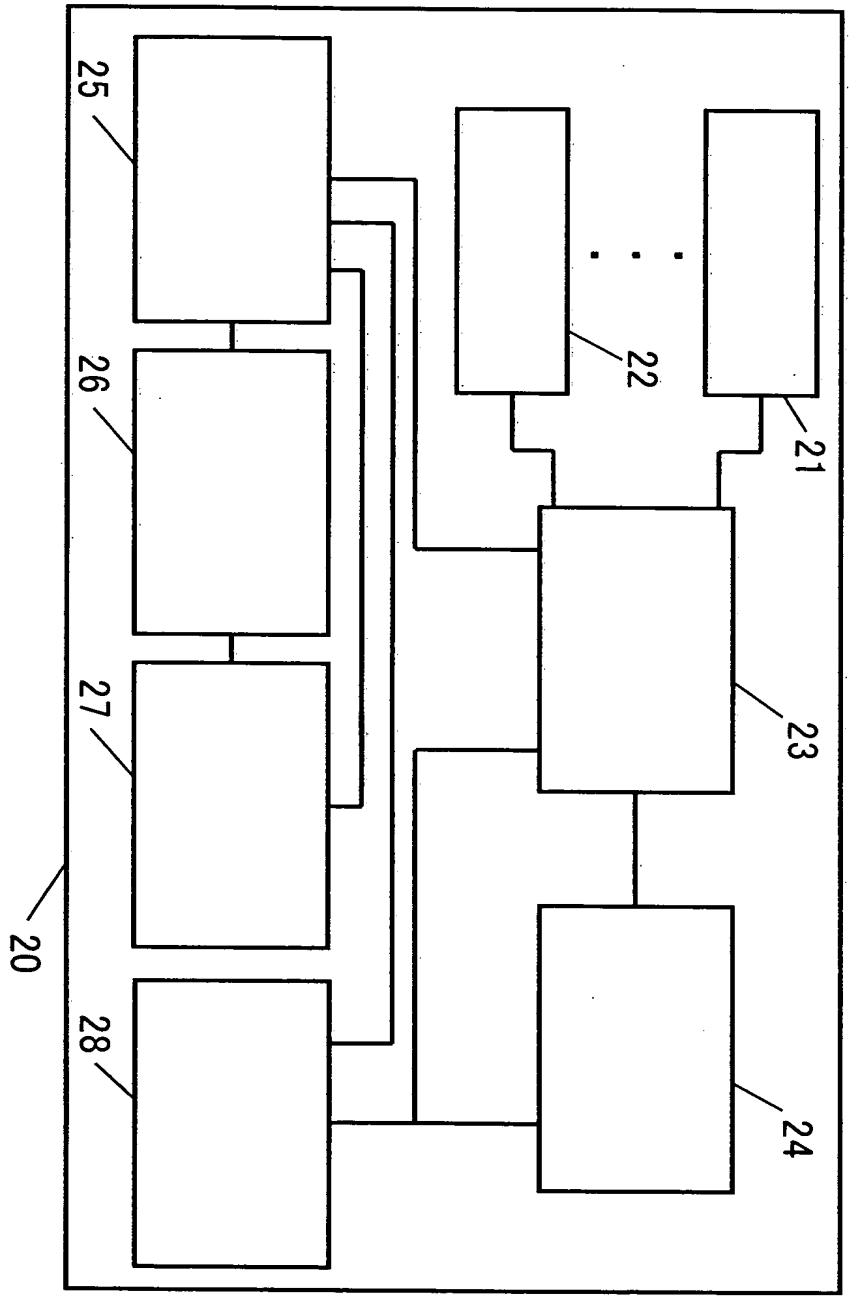


FIG.3

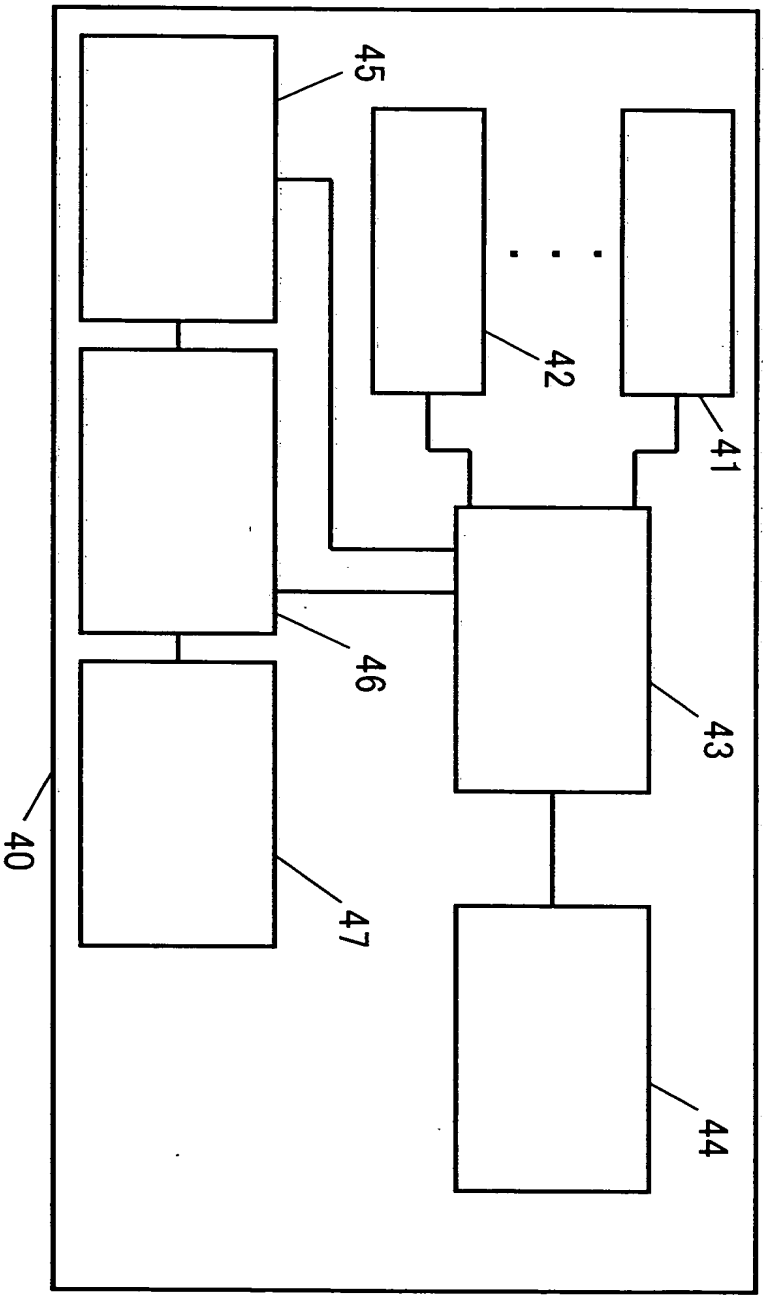
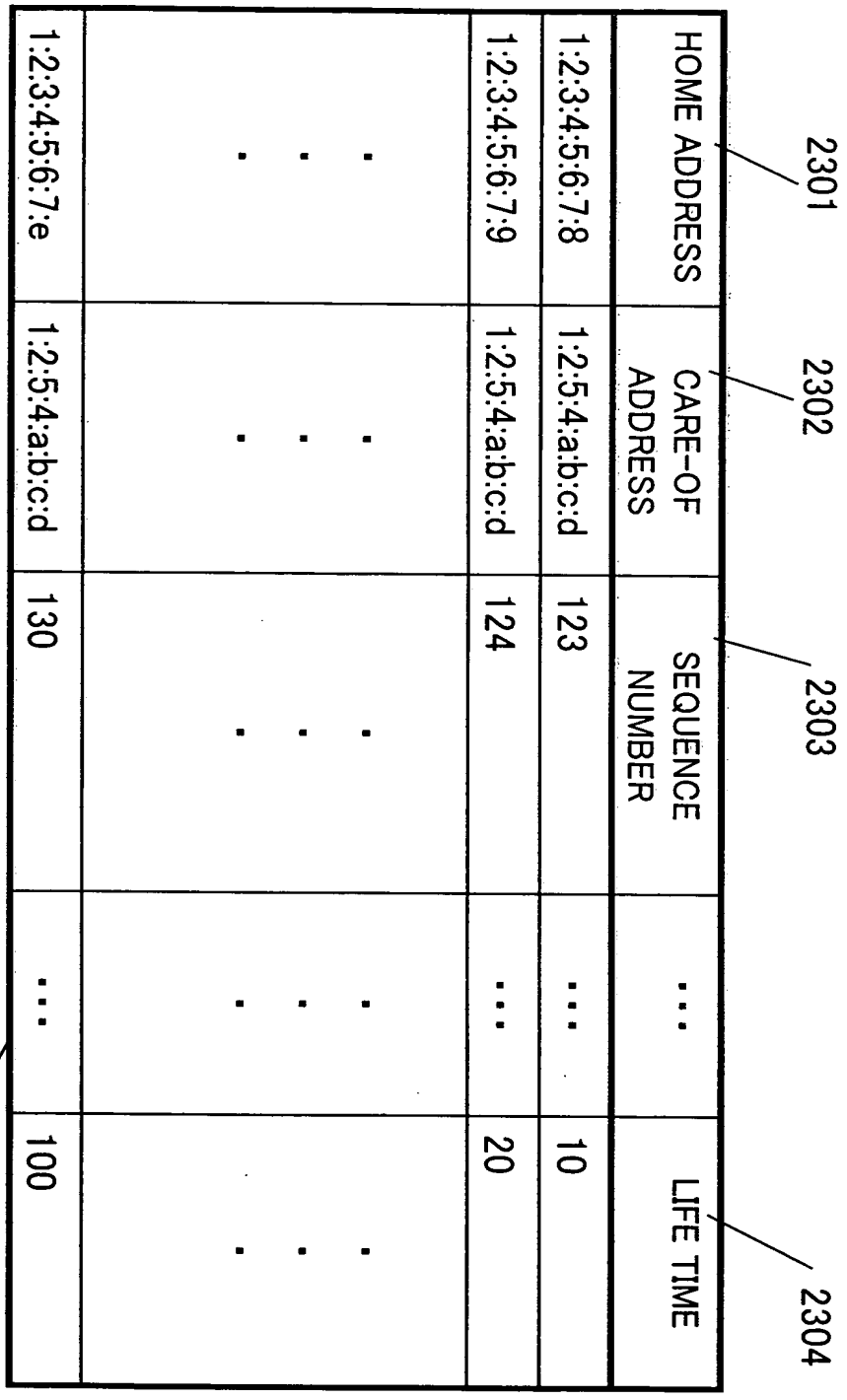


FIG.4


2301
2302
2303
2304
2300
HOME ADDRESS
CARE-OF ADDRESS
SEQUENCE NUMBER
LIFE TIME
1:2:3:4:5:6:7:8
1:2:5:4:a:b:c:d
123
10
1:2:3:4:5:6:7:9
1:2:5:4:a:b:c:d
124
20
1:2:3:4:5:6:7:e
1:2:5:4:a:b:c:d
130
100

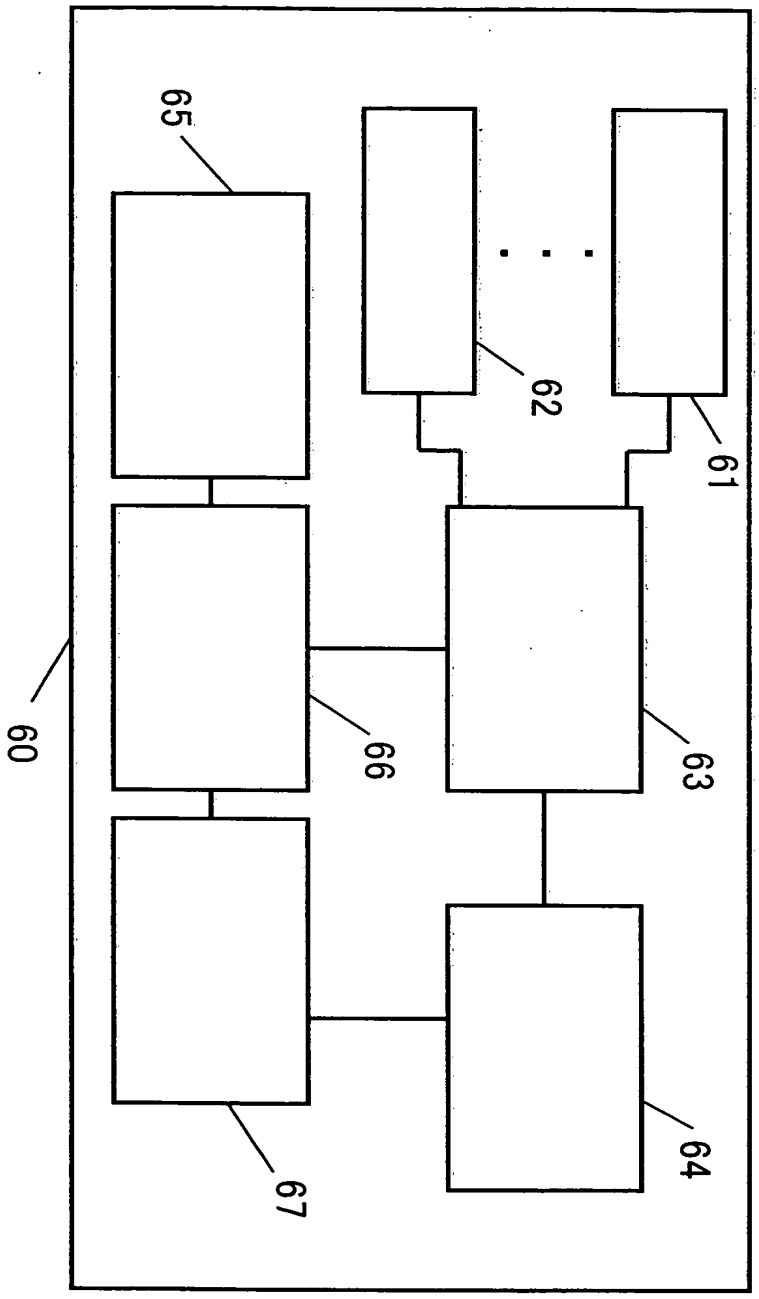


FIG.5

FIG.6

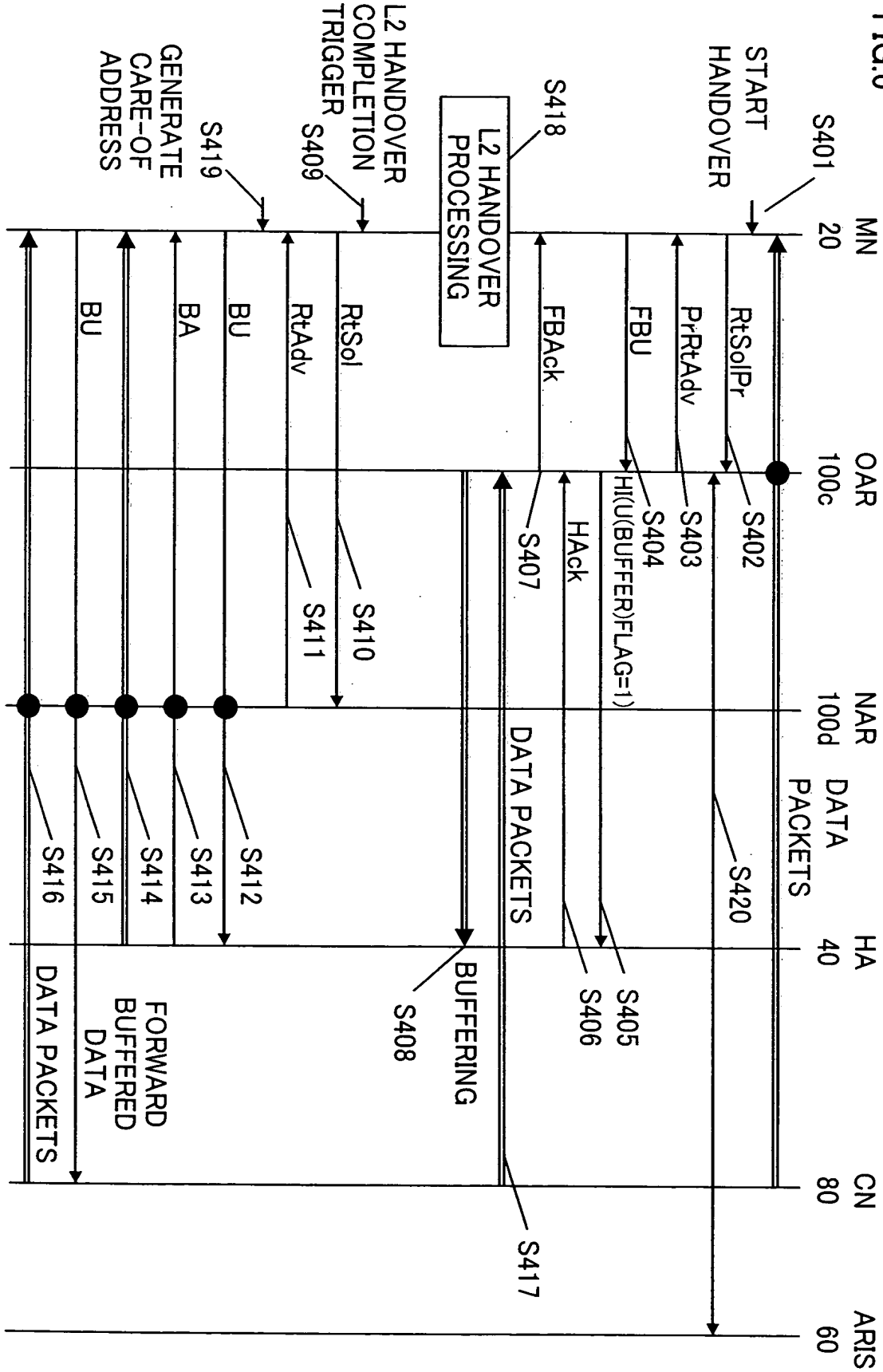

MN
20
OAR
100c
NAR
100d
HA
40
CN
80
ARIS
60
START HANDOVER
S401
RtSolPr
S402
PrRtAdv
S403
FBU
S404
HI(U(BUFFER)FLAG=1)
L2 HANDOVER PROCESSING
S418
FBAck
S407
HAck
S405
S406
DATA PACKETS
S420
L2 HANDOVER COMPLETION TRIGGER
S409
RtSol
S410
RtAdv
S411
BUFFERING
S408
GENERATE CARE-OF ADDRESS
S419
BU
S412
BA
S413
BU
S414
BU
S415
DATA PACKETS
S416
FORWARD BUFFERED DATA
S417

FIG.7

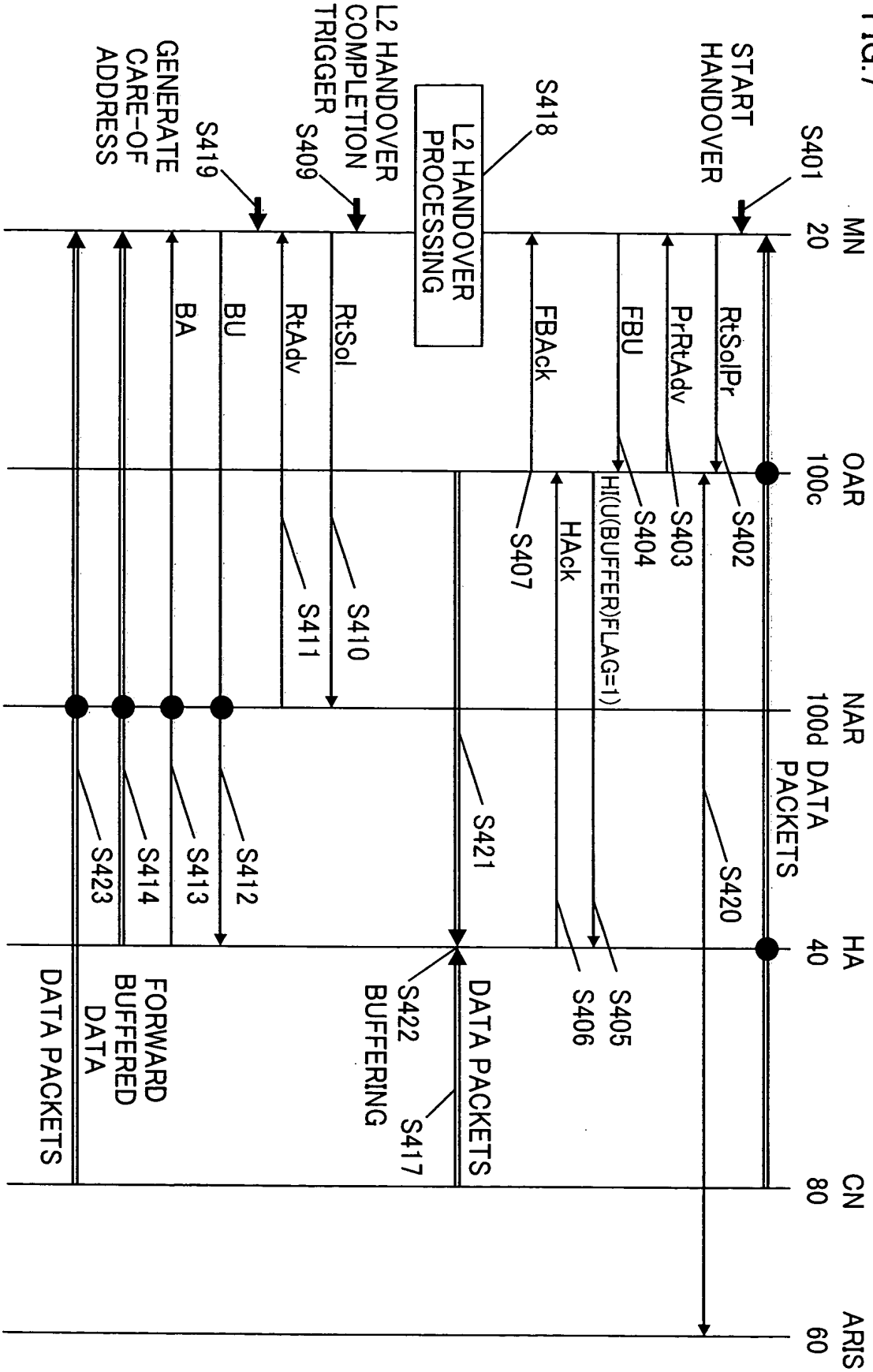

MN
20
OAR
100c
NAR
100d
HA
40
CN
80
ARIS
60
START HANDOVER
S401
RtSolPr
S402
PrRtAdv
S403
FBU
S404
HI(U(BUFFER)FLAG=1)
S405
HAck
S406
FBAck
S407
L2 HANDOVER PROCESSING
S418
L2 HANDOVER COMPLETION TRIGGER
S409
RtSol
S410
RtAdv
S411
BU
S412
BA
S413
GENERATE CARE-OF ADDRESS
S419
S414
S420
DATA PACKETS
S421
BUFFERING
S422
S417
DATA PACKETS
FORWARD BUFFERED DATA
S423

FIG.8

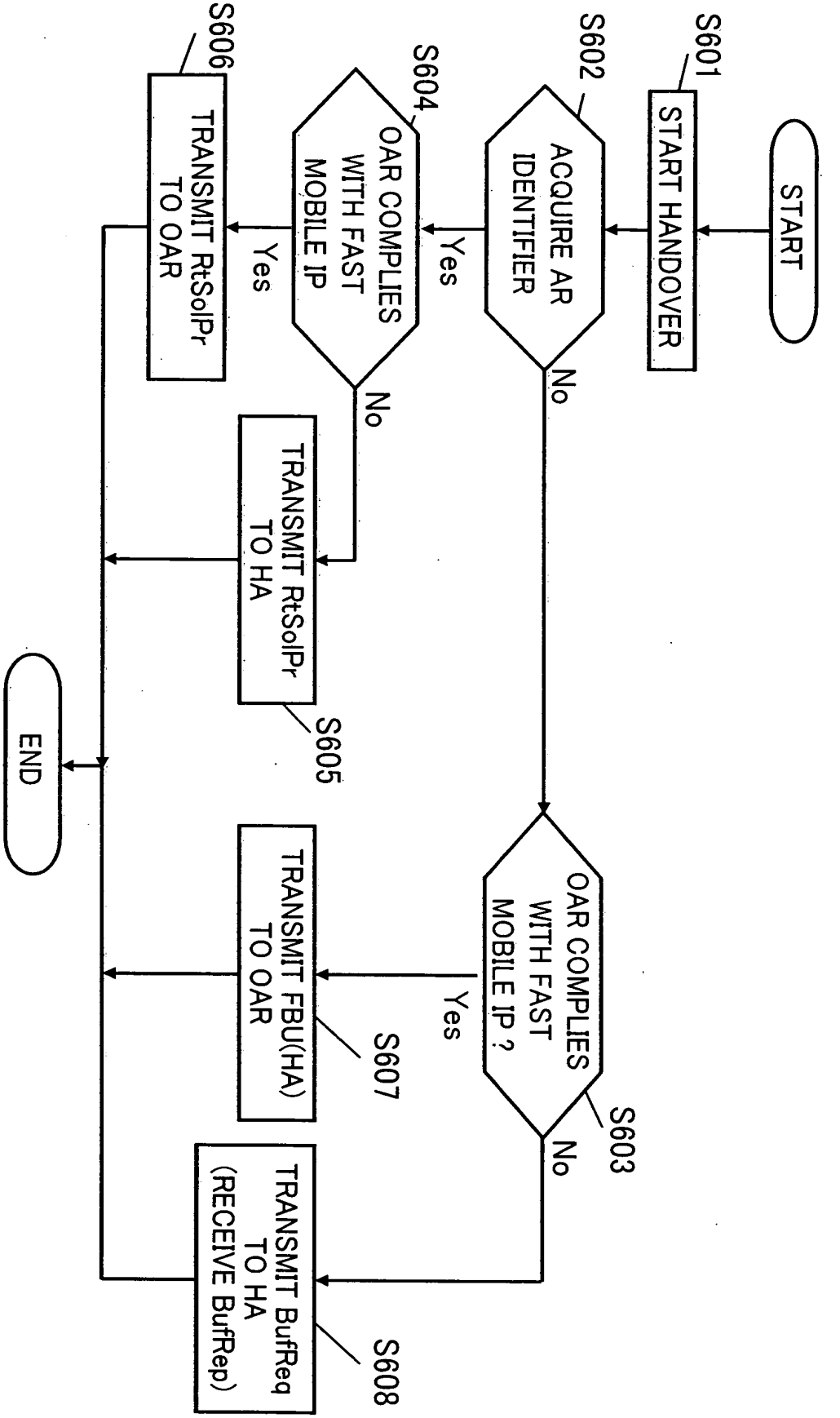

START
S601
START HANDOVER
S602
ACQUIRE AR IDENTIFIER
Yes
No
S603
OAR COMPLIES WITH FAST MOBILE IP ?
Yes
No
S604
OAR COMPLIES WITH FAST MOBILE IP
Yes
No
S605
TRANSMIT RtSolPr TO HA
S606
TRANSMIT RtSolPr TO OAR
S607
TRANSMIT FBU(HA) TO OAR
S608
TRANSMIT BufReq TO HA (RECEIVE BufRep)
END

FIG.9

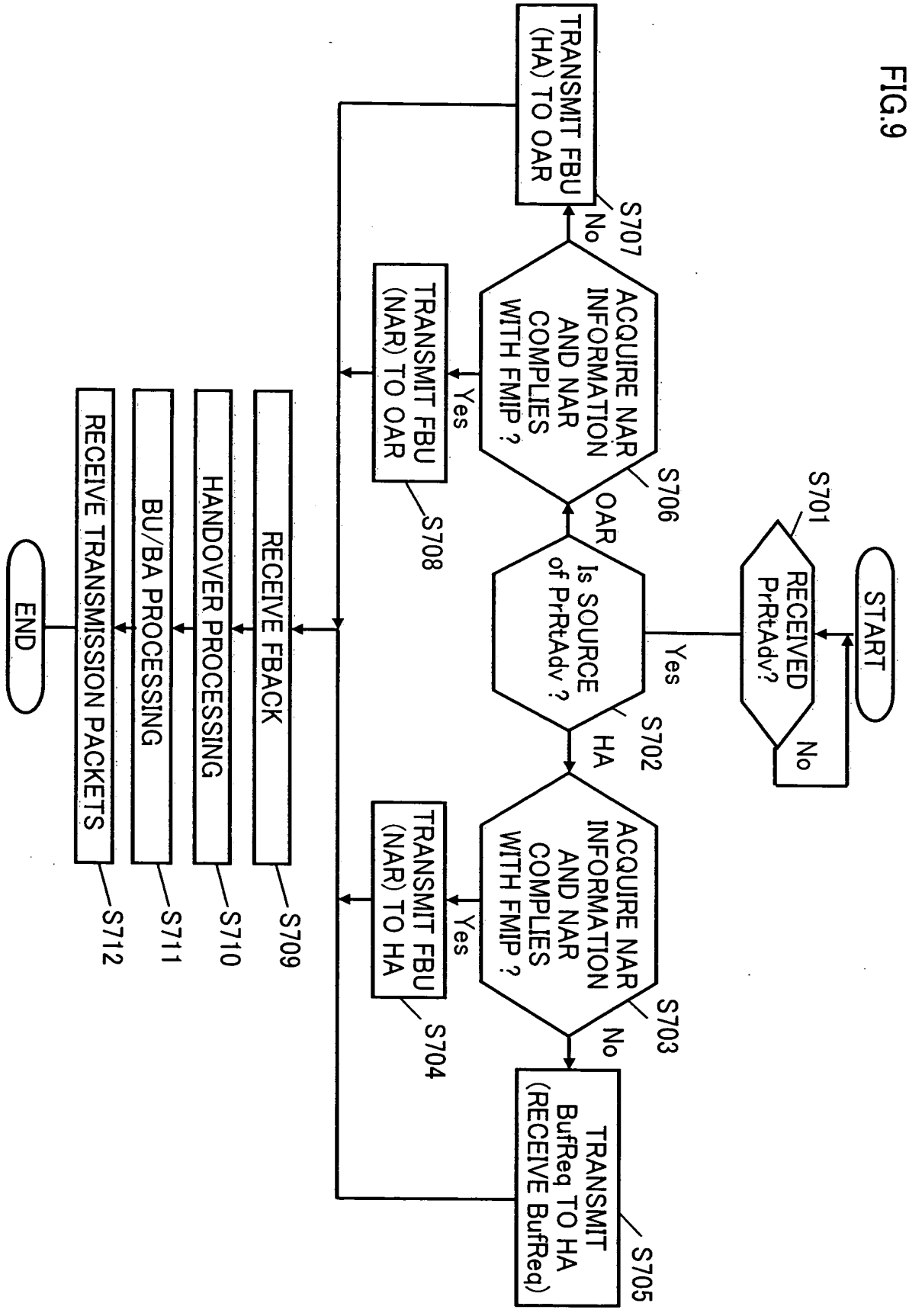

START
S701
RECEIVED PrRtAdv?
No
Yes
S702
Is SOURCE of PrRtAdv ?
HA
OAR
S706
ACQUIRE NAR INFORMATION AND NAR COMPLIES WITH FMIP ?
No
Yes
S707
TRANSMIT FBU (HA) TO OAR
S708
TRANSMIT FBU (NAR) TO OAR
S703
ACQUIRE NAR INFORMATION AND NAR COMPLIES WITH FMIP ?
No
Yes
S704
TRANSMIT FBU (NAR) TO HA
S705
TRANSMIT BufReq TO HA (RECEIVE BufReq)
S709
RECEIVE FBACK
S710
HANDOVER PROCESSING
S711
BU/BA PROCESSING
S712
RECEIVE TRANSMISSION PACKETS
END

FIG.10

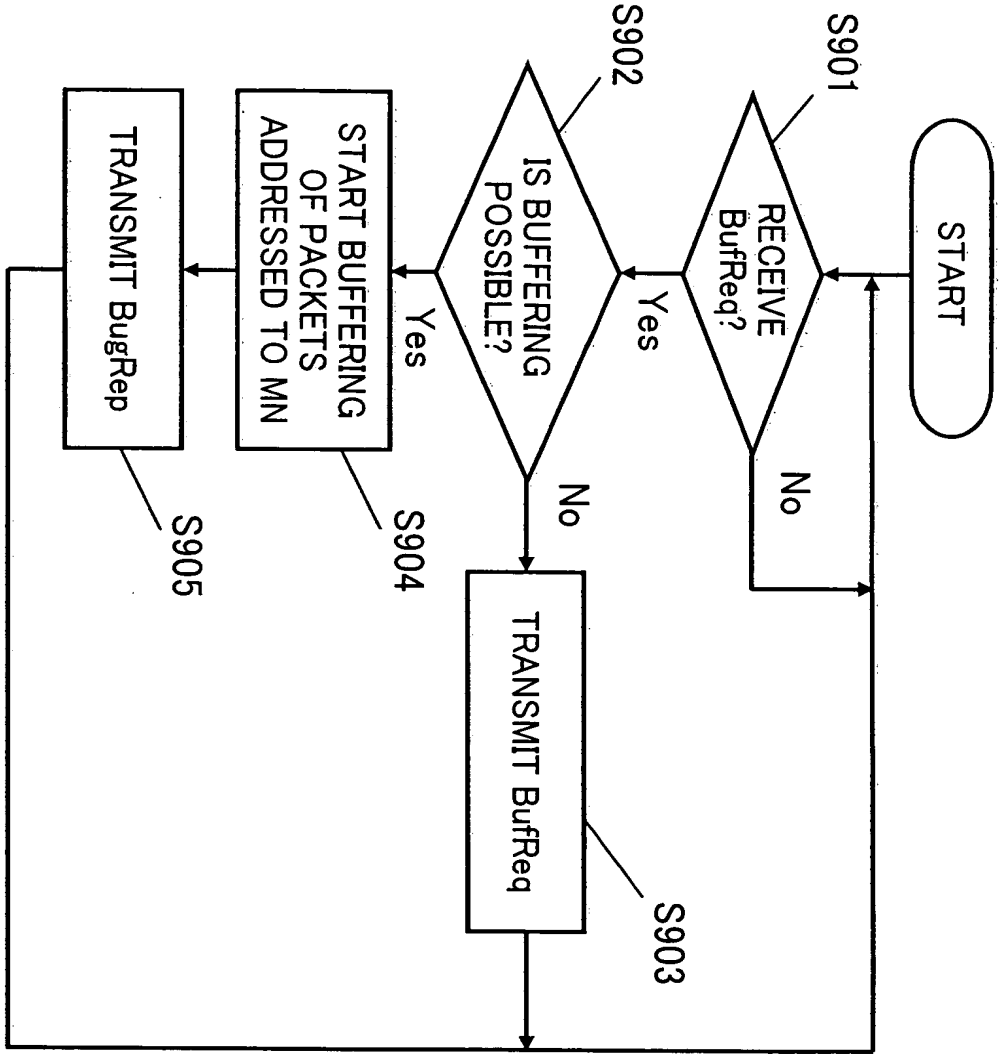

START
S901
RECEIVE BufReq?
Yes
No
S902
IS BUFFERING POSSIBLE?
Yes
No
S904
START BUFFERING OF PACKETS ADDRESSED TO MN
S905
TRANSMIT BugRep
S903
TRANSMIT BufReq

FIG.11

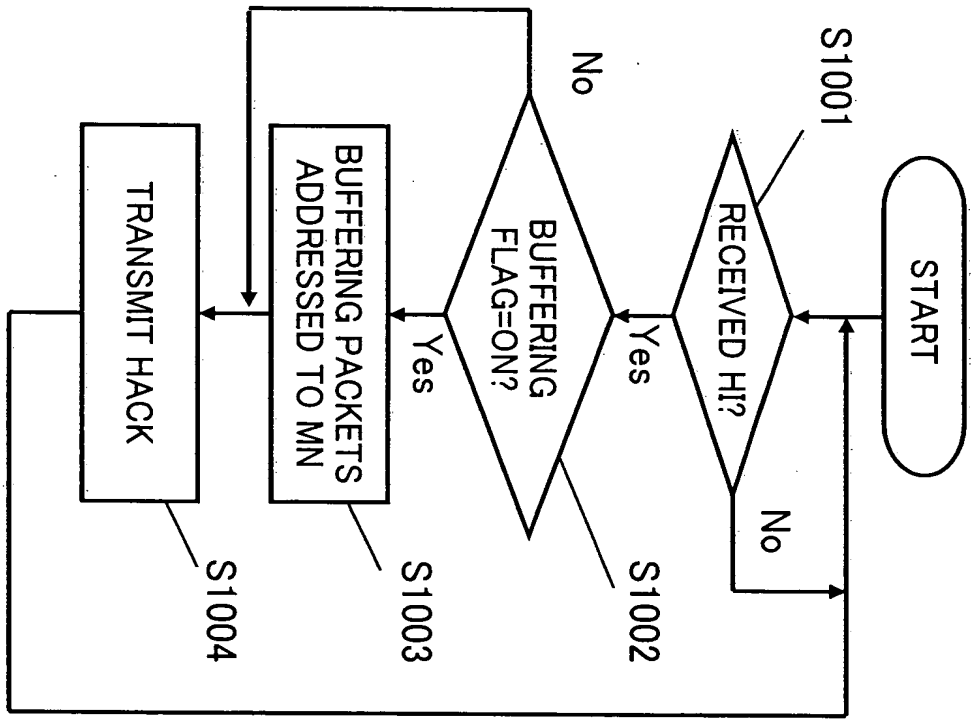

START
RECEIVED HI?
S1001
Yes
No
BUFFERING FLAG=ON?
S1002
Yes
No
BUFFERING PACKETS ADDRESSED TO MN
S1003
TRANSMIT HACK
S1004

FIG.12

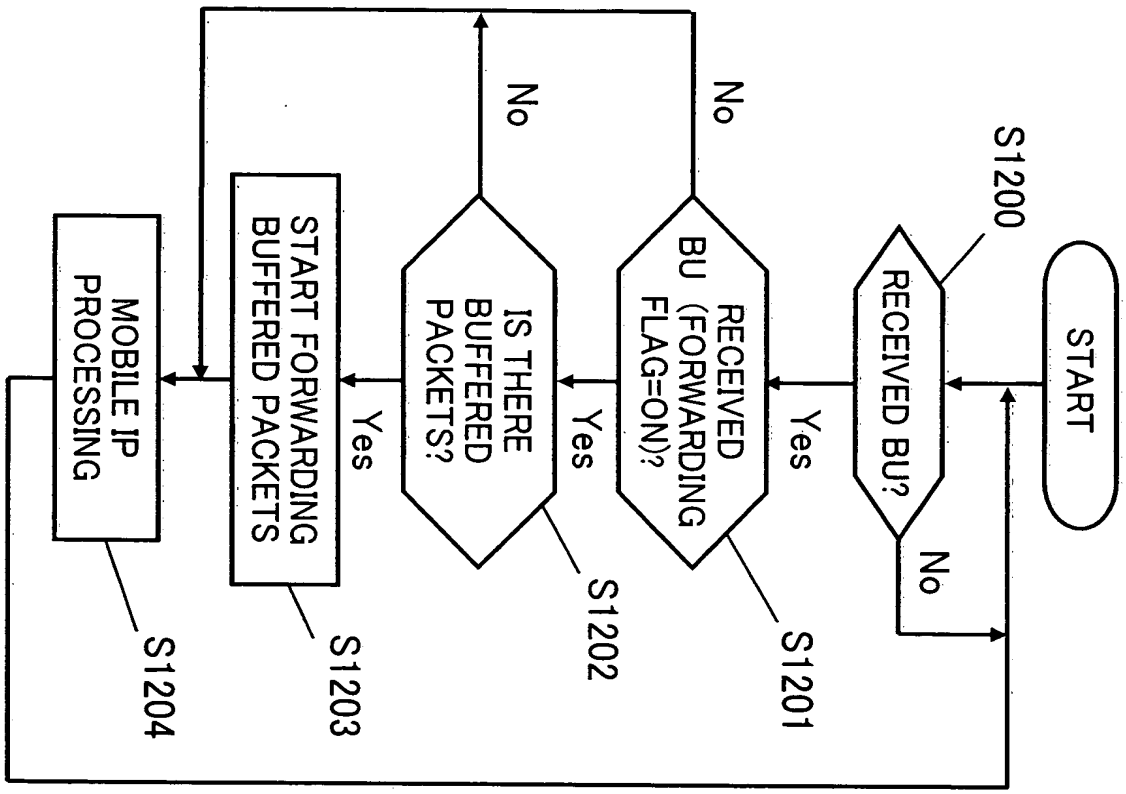

START
S1200
RECEIVED BU?
No
Yes
RECEIVED BU (FORWARDING FLAG=ON)?
No
S1201
Yes
IS THERE BUFFERED PACKETS?
No
S1202
Yes
START FORWARDING BUFFERED PACKETS
S1203
MOBILE IP PROCESSING
S1204

FIG.13

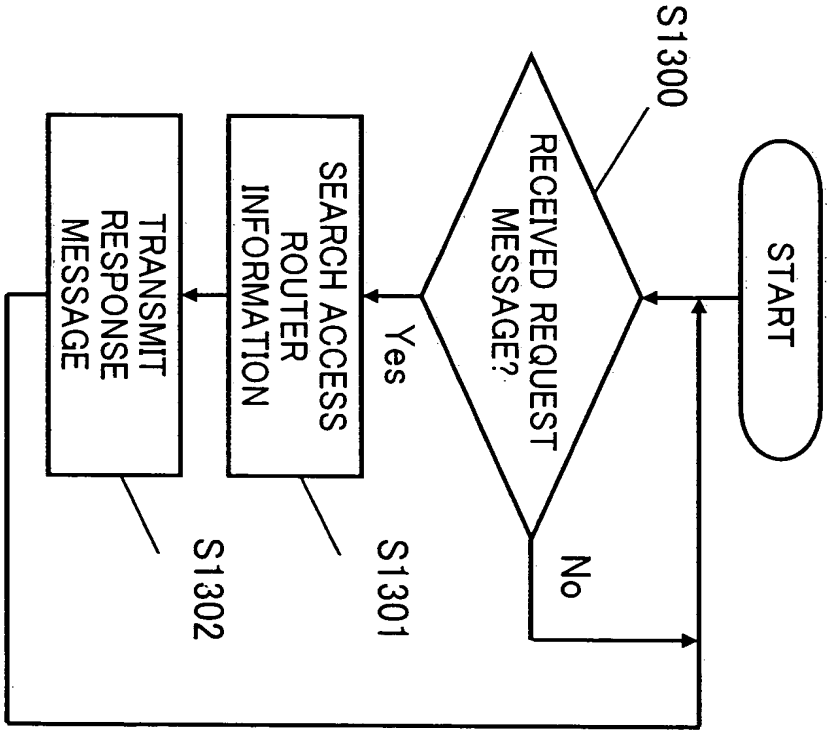

START
S1300
RECEIVED REQUEST MESSAGE?
Yes
No
SEARCH ACCESS ROUTER INFORMATION
S1301
TRANSMIT RESPONSE MESSAGE
S1302

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FIG.14A

1301 LOWER LAYER ADDRESS	1302 IP ADDRESS	1303 FAST HANDOVER COMPLIANCE
1	1:2:3:4:5:6:7:8	COMPLY
2	1:2:3:a:b:c:d:e	NOT COMPLY
.	.	.
.	.	.
.	.	.

1300

FIG.14B

1301 LOWER LAYER ADDRESS	1302 IP ADDRESS	1303 FAST HANDOVER COMPLIANCE	1304 PRIORITY
1	1:2:3:4:5:6:7:8	COMPLY	Low
2	1:2:3:a:b:c:d:e	NOT COMPLY	High
.	.	.	
.	.	.	
.	.	.	

1300

FIG.14C

1301 LOWER LAYER ADDRESS	1302 IP ADDRESS	1303 FAST HANDOVER COMPLIANCE	1305 TRANSMISSION RATE VALUE
1	1:2:3:4:5:6:7:8	COMPLY	8Mbps
2	1:2:3:a:b:c:d:e	NOT COMPLY	100Mbps
.	.	.	
.	.	.	
.	.	.	

1300

FIG.15

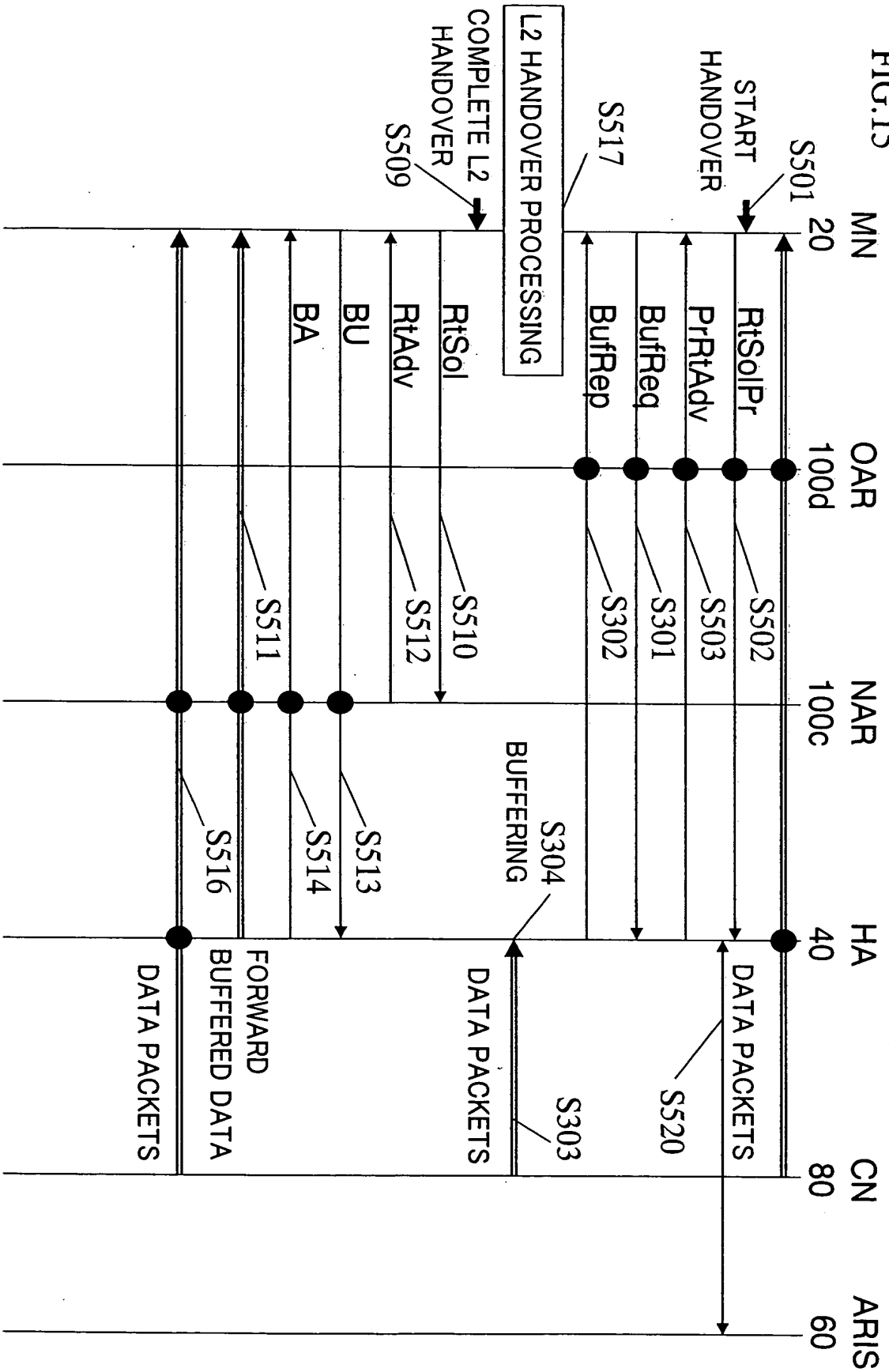

MN
20
OAR
100d
NAR
100c
HA
40
CN
80
ARIS
60
S501
START HANDOVER
RtSolPr
PrRtAdv
BufReq
BufRep
S502
S503
S301
S302
S517
L2 HANDOVER PROCESSING
S509
COMPLETE L2 HANDOVER
RtSol
RtAdv
BU
BA
S510
S512
S513
S514
S511
S516
S304
BUFFERING
DATA PACKETS
S303
S520
DATA PACKETS
FORWARD BUFFERED DATA
DATA PACKETS

FIG.16

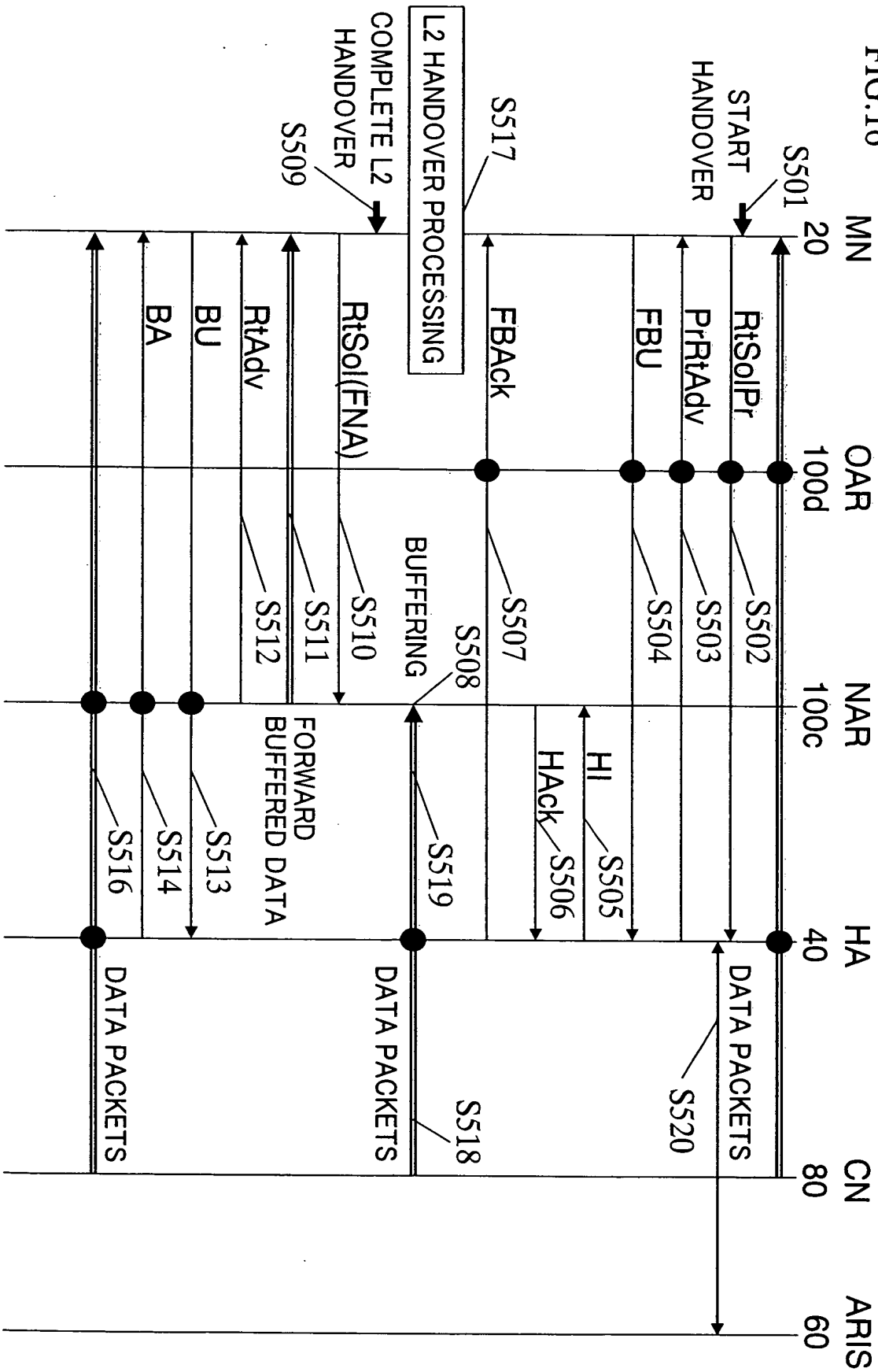

MN
OAR
NAR
HA
CN
ARIS
20
100d
100c
40
80
60
START HANDOVER
S501
RtSolPr
PrRtAdv
S502
S503
FBU
S504
FBAck
S507
L2 HANDOVER PROCESSING
S517
COMPLETE L2 HANDOVER
S509
RtSol(FNA)
S510
BUFFERING
S508
RtAdv
S511
BU
S512
BA
S513
S514
HI
S505
HAck
S506
FORWARD BUFFERED DATA
S519
DATA PACKETS
S518
DATA PACKETS
S520
DATA PACKETS
S516

FIG.17

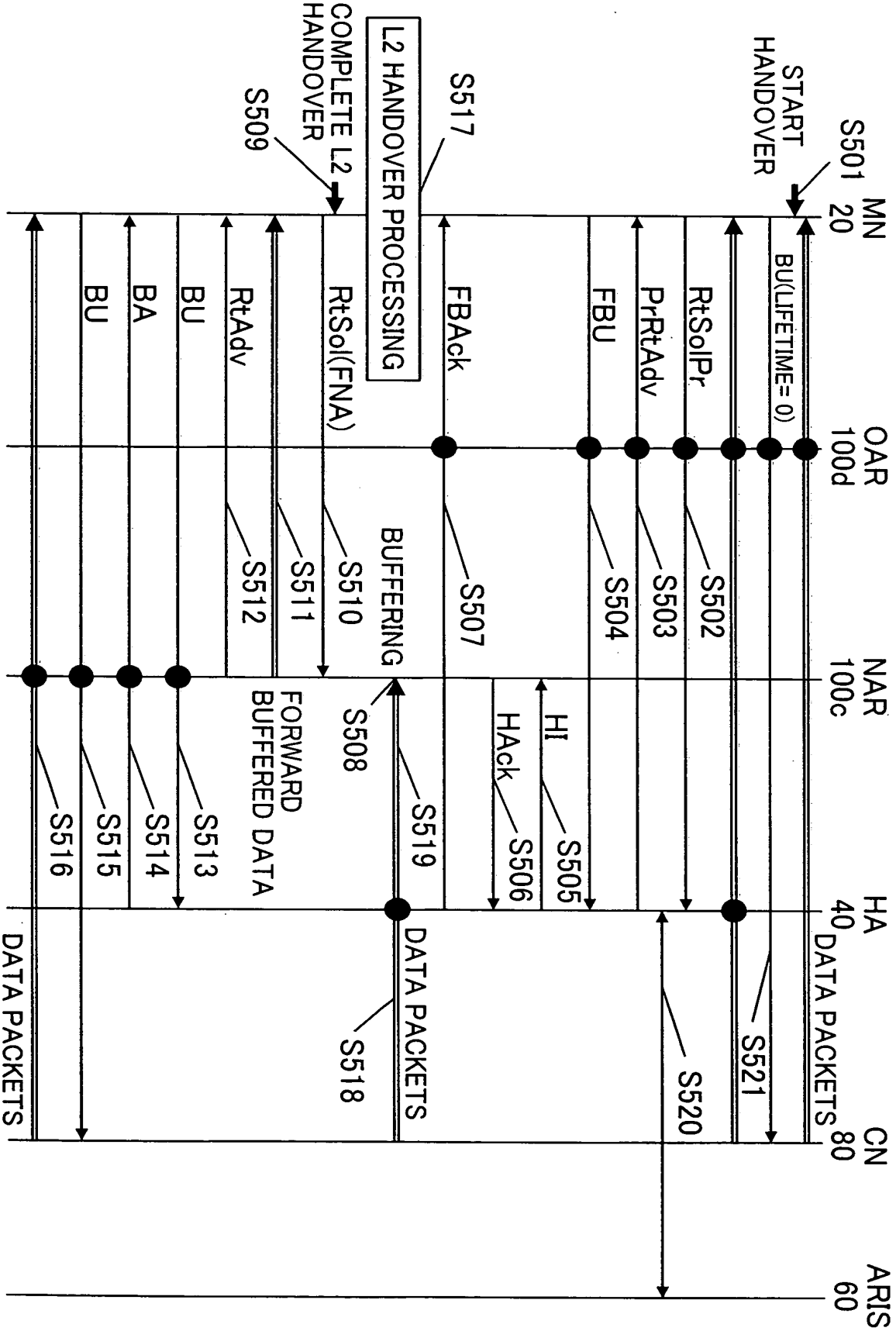

MN 20
OAR 100d
NAR 100c
HA 40
CN 80
ARIS 60
START HANDOVER
S501
BU(LIFETIME= 0)
RtSolPr
PrRtAdv
FBU
S502
S503
S504
L2 HANDOVER PROCESSING
S517
FBAck
S507
BUFFERING
RtSol(FNA)
S510
S511
RtAdv
S512
COMPLETE L2 HANDOVER
S509
HI
S505
HAck
S506
S508
S519
FORWARD BUFFERED DATA
BU
S513
BA
S514
BU
S515
BU
S516
DATA PACKETS
S518
DATA PACKETS
S520
DATA PACKETS
S521

FIG.18

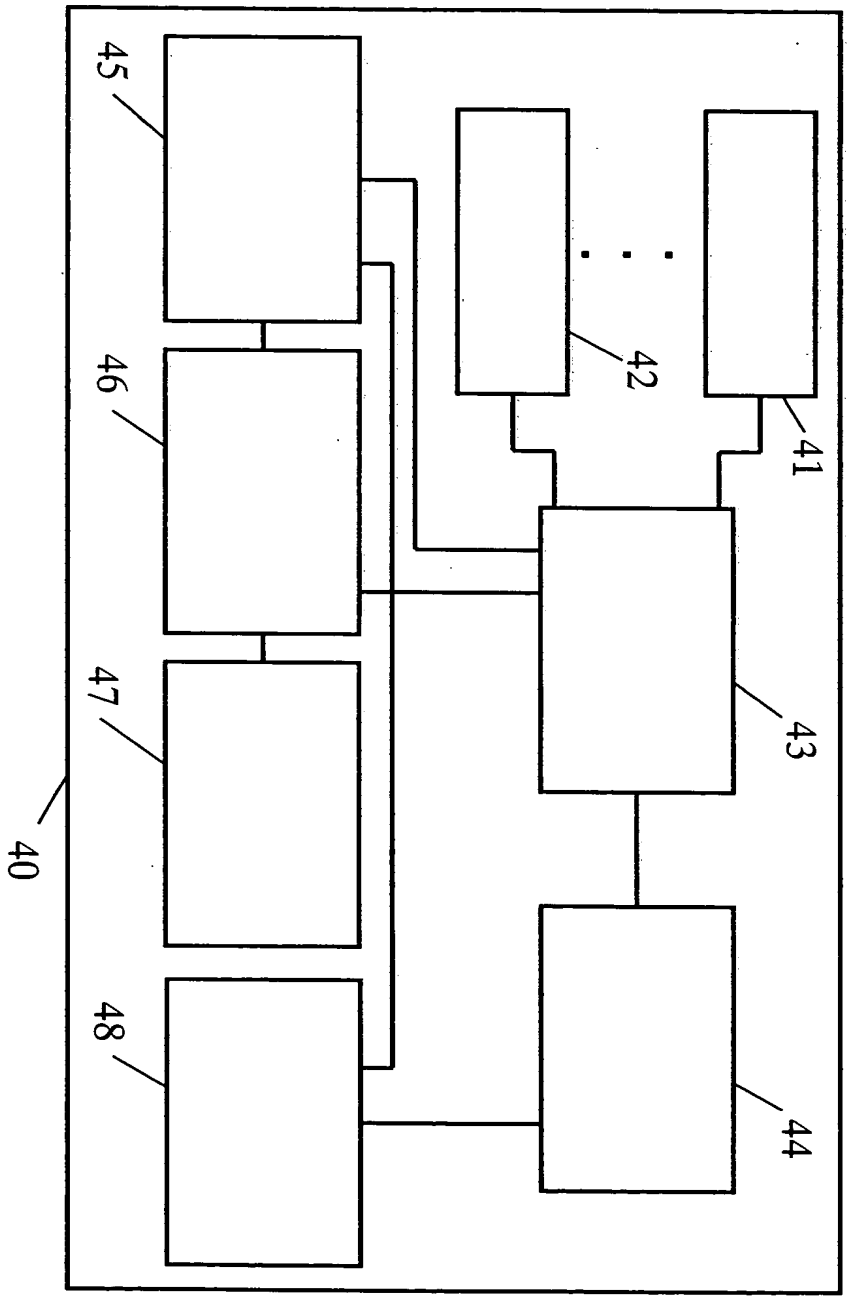


FIG.19

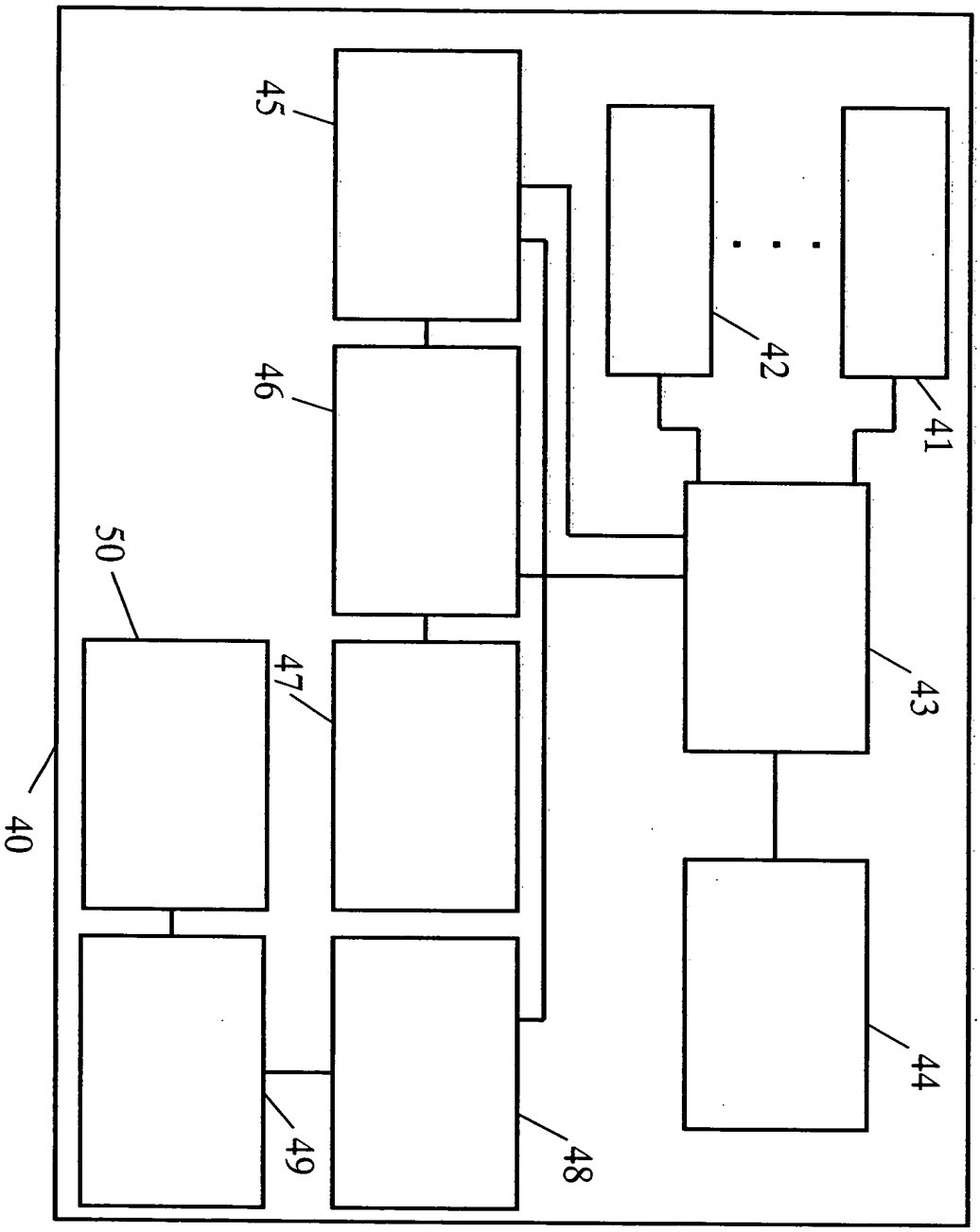


FIG.20

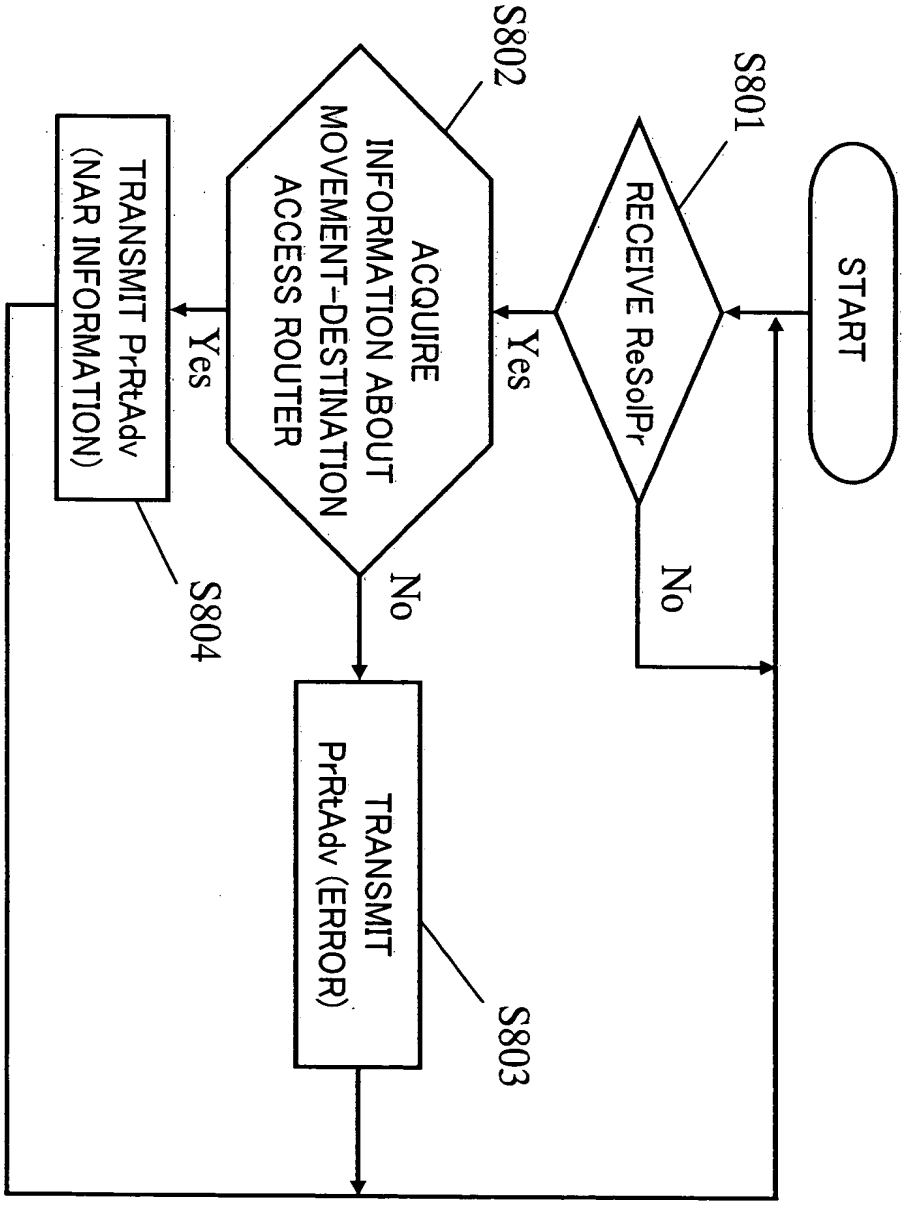

START
S801
RECEIVE ReSolPr
Yes
No
S802
ACQUIRE INFORMATION ABOUT MOVEMENT-DESTINATION ACCESS ROUTER
Yes
No
TRANSMIT PrRtAdv (NAR INFORMATION)
S804
TRANSMIT PrRtAdv (ERROR)
S803

FIG.21

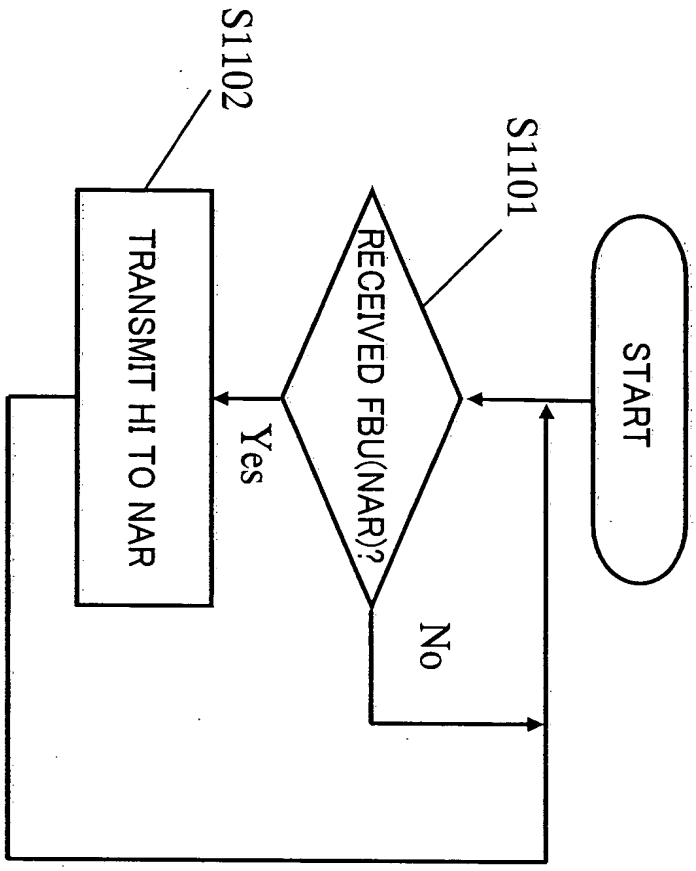


FIG.22

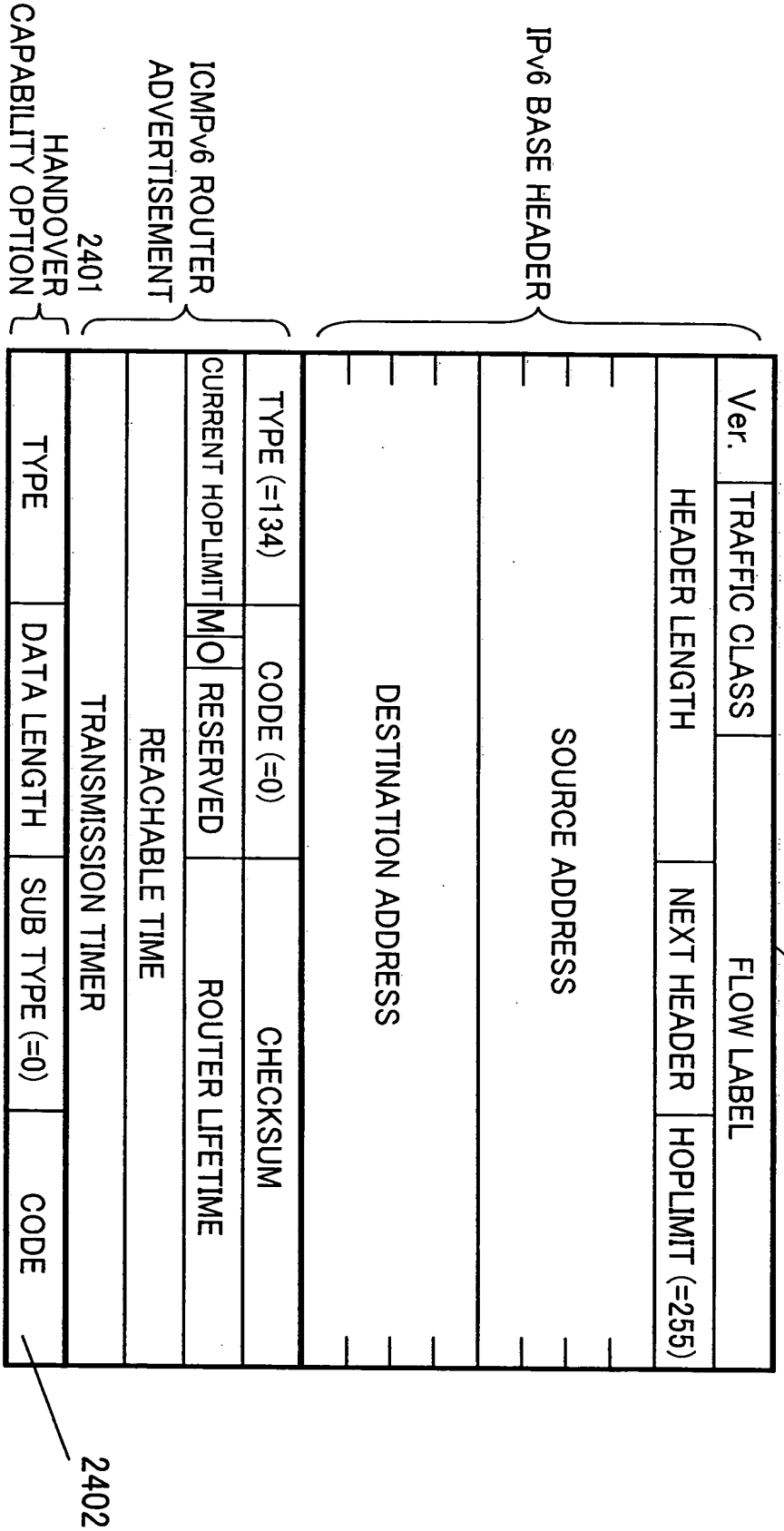

IPv6 BASE HEADER
ICMPv6 ROUTER ADVERTISEMENT
2401
HANDOVER CAPABILITY OPTION
Ver.
TRAFFIC CLASS
FLOW LABEL
HEADER LENGTH
NEXT HEADER
HOPLIMIT (=255)
SOURCE ADDRESS
DESTINATION ADDRESS
TYPE (=134)
CODE (=0)
CHECKSUM
CURRENT HOPLIMIT
M
O
RESERVED
ROUTER LIFETIME
REACHABLE TIME
TRANSMISSION TIMER
TYPE
DATA LENGTH
SUB TYPE (=0)
CODE
2400
2402

FIG.23

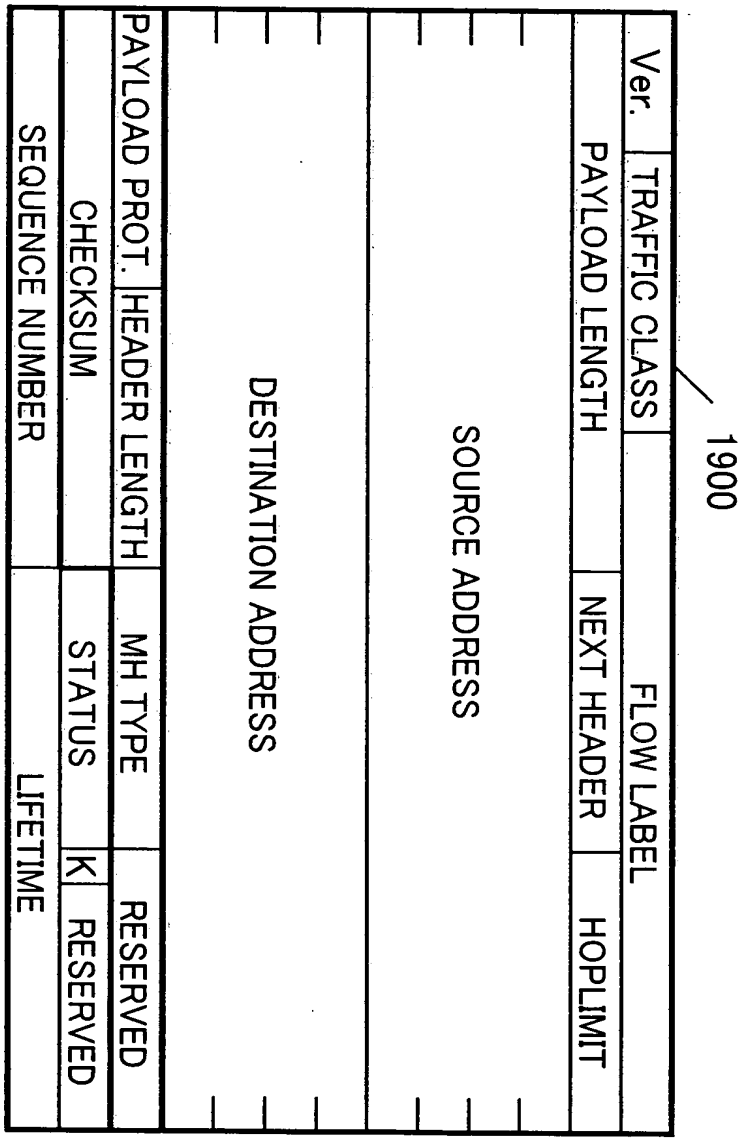

1900
Ver.
TRAFFIC CLASS
FLOW LABEL
PAYLOAD LENGTH
NEXT HEADER
HOPLIMIT
SOURCE ADDRESS
DESTINATION ADDRESS
PAYLOAD PROT.
HEADER LENGTH
MH TYPE
RESERVED
CHECKSUM
STATUS
K
RESERVED
SEQUENCE NUMBER
LIFETIME

FIG.24

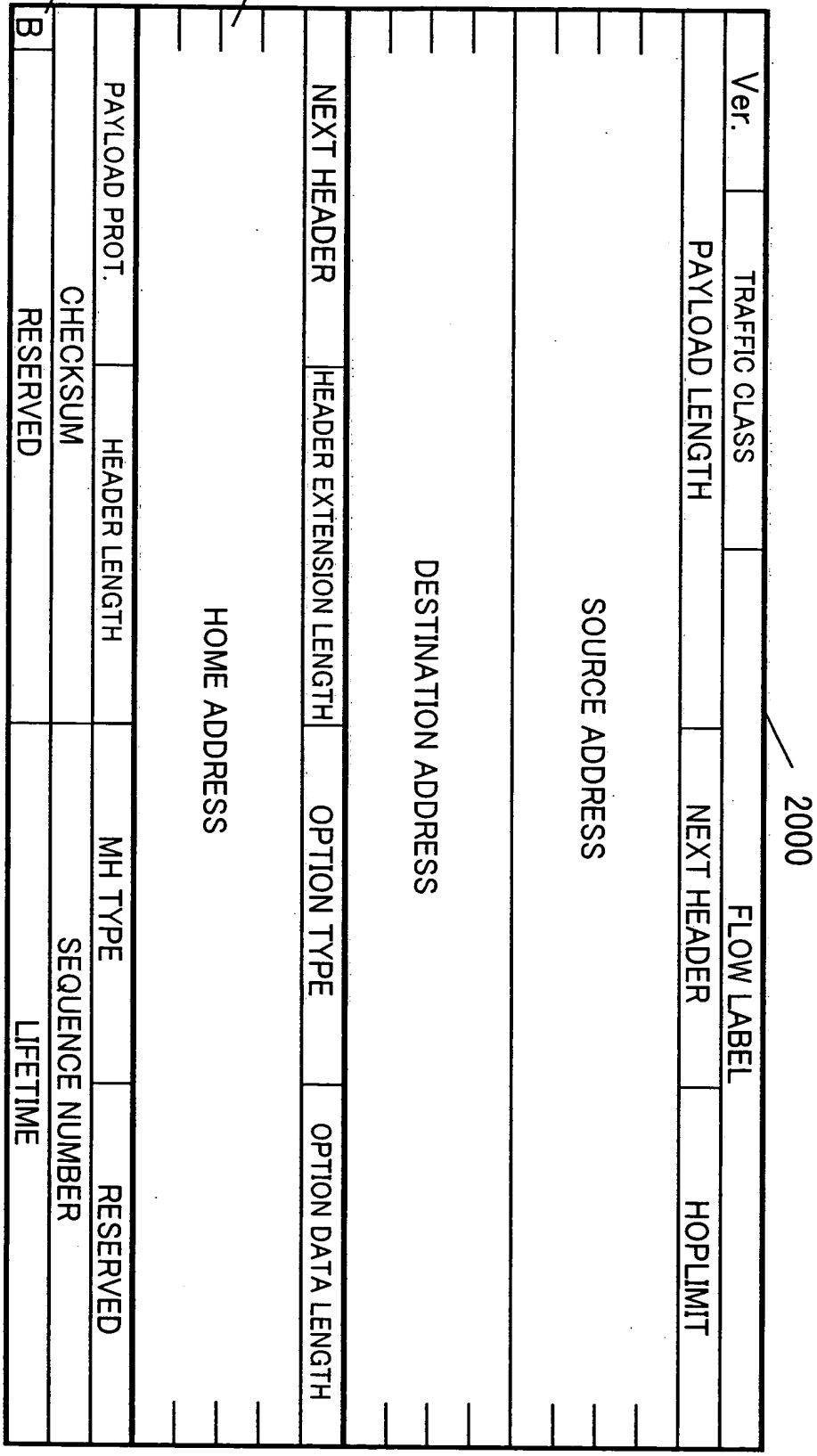

2000
Ver.
TRAFFIC CLASS
FLOW LABEL
PAYLOAD LENGTH
NEXT HEADER
HOPLIMIT
SOURCE ADDRESS
DESTINATION ADDRESS
2002
NEXT HEADER
HEADER EXTENSION LENGTH
OPTION TYPE
OPTION DATA LENGTH
HOME ADDRESS
2001
PAYLOAD PROT.
HEADER LENGTH
MH TYPE
RESERVED
CHECKSUM
SEQUENCE NUMBER
B
RESERVED
LIFETIME

FIG.25

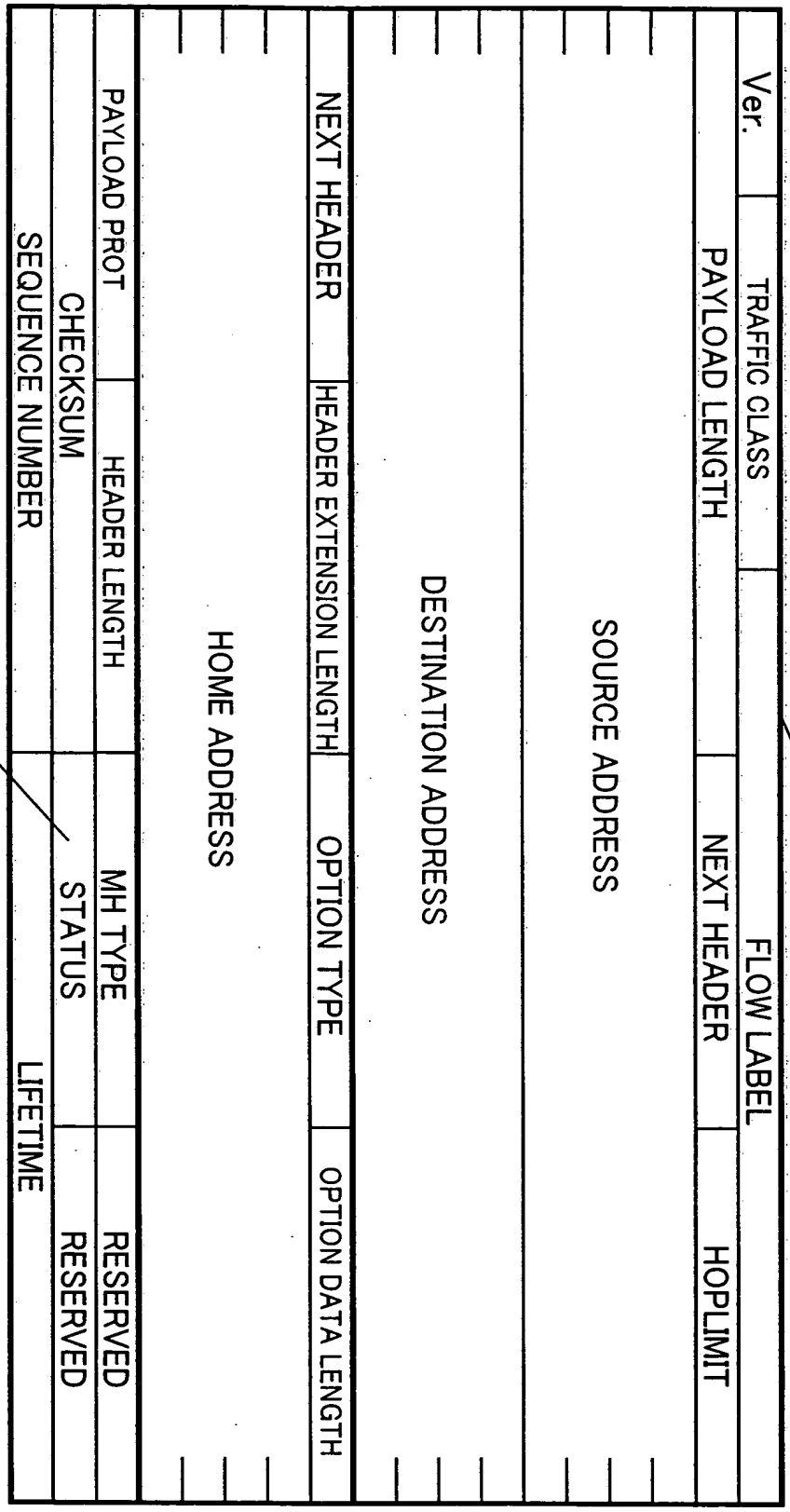

Ver.
TRAFFIC CLASS
FLOW LABEL
PAYLOAD LENGTH
NEXT HEADER
HOPLIMIT
SOURCE ADDRESS
DESTINATION ADDRESS
NEXT HEADER
HEADER EXTENSION LENGTH
OPTION TYPE
OPTION DATA LENGTH
HOME ADDRESS
PAYLOAD PROT
HEADER LENGTH
MH TYPE
RESERVED
CHECKSUM
STATUS
RESERVED
SEQUENCE NUMBER
LIFETIME
2100
2101

FIG.26

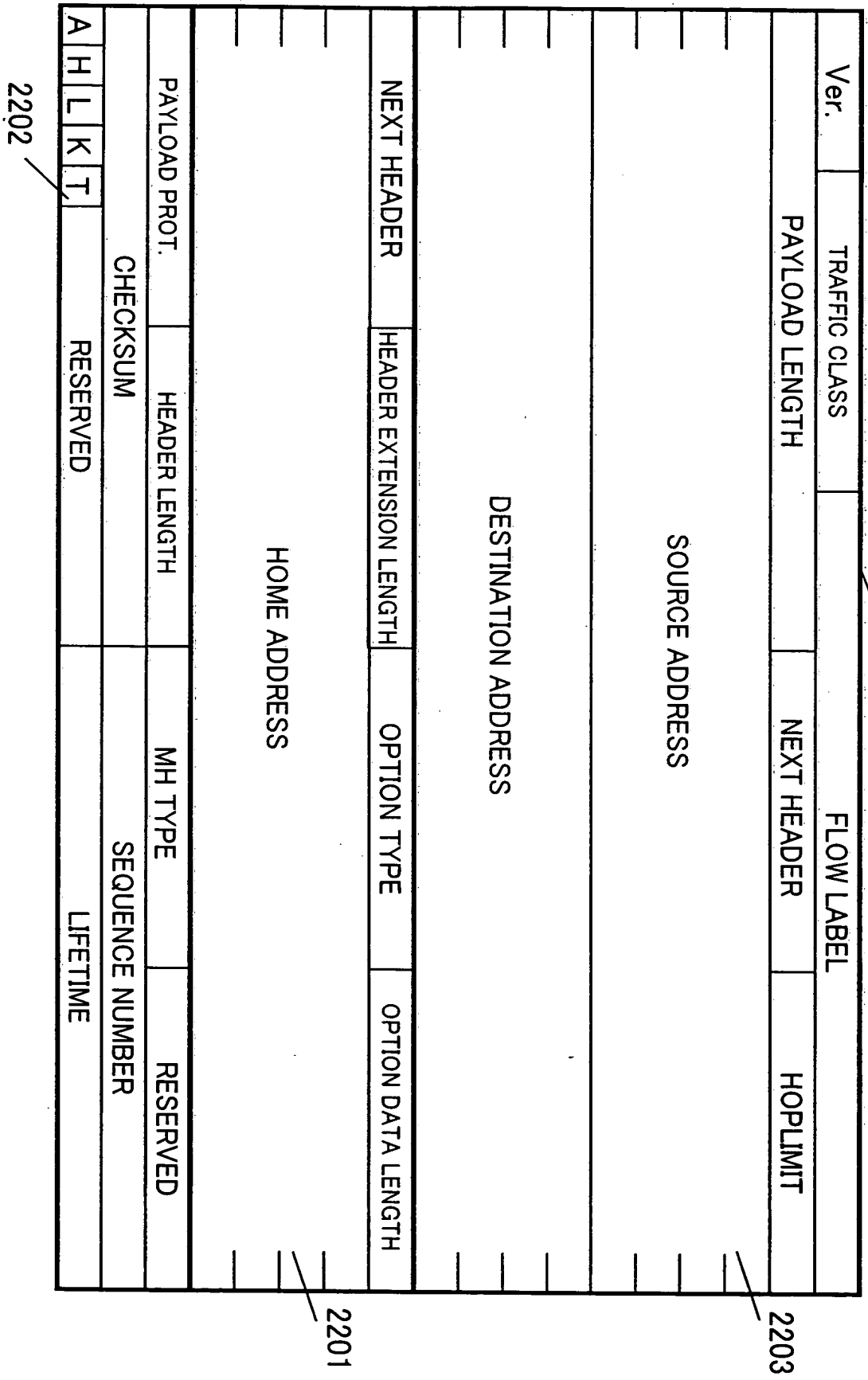

Ver.
TRAFFIC CLASS
FLOW LABEL
PAYLOAD LENGTH
NEXT HEADER
HOPLIMIT
SOURCE ADDRESS
DESTINATION ADDRESS
NEXT HEADER
HEADER EXTENSION LENGTH
OPTION TYPE
OPTION DATA LENGTH
HOME ADDRESS
PAYLOAD PROT.
HEADER LENGTH
MH TYPE
RESERVED
CHECKSUM
SEQUENCE NUMBER
A H L K T
RESERVED
LIFETIME
2200
2203
2201
2202

FIG.27

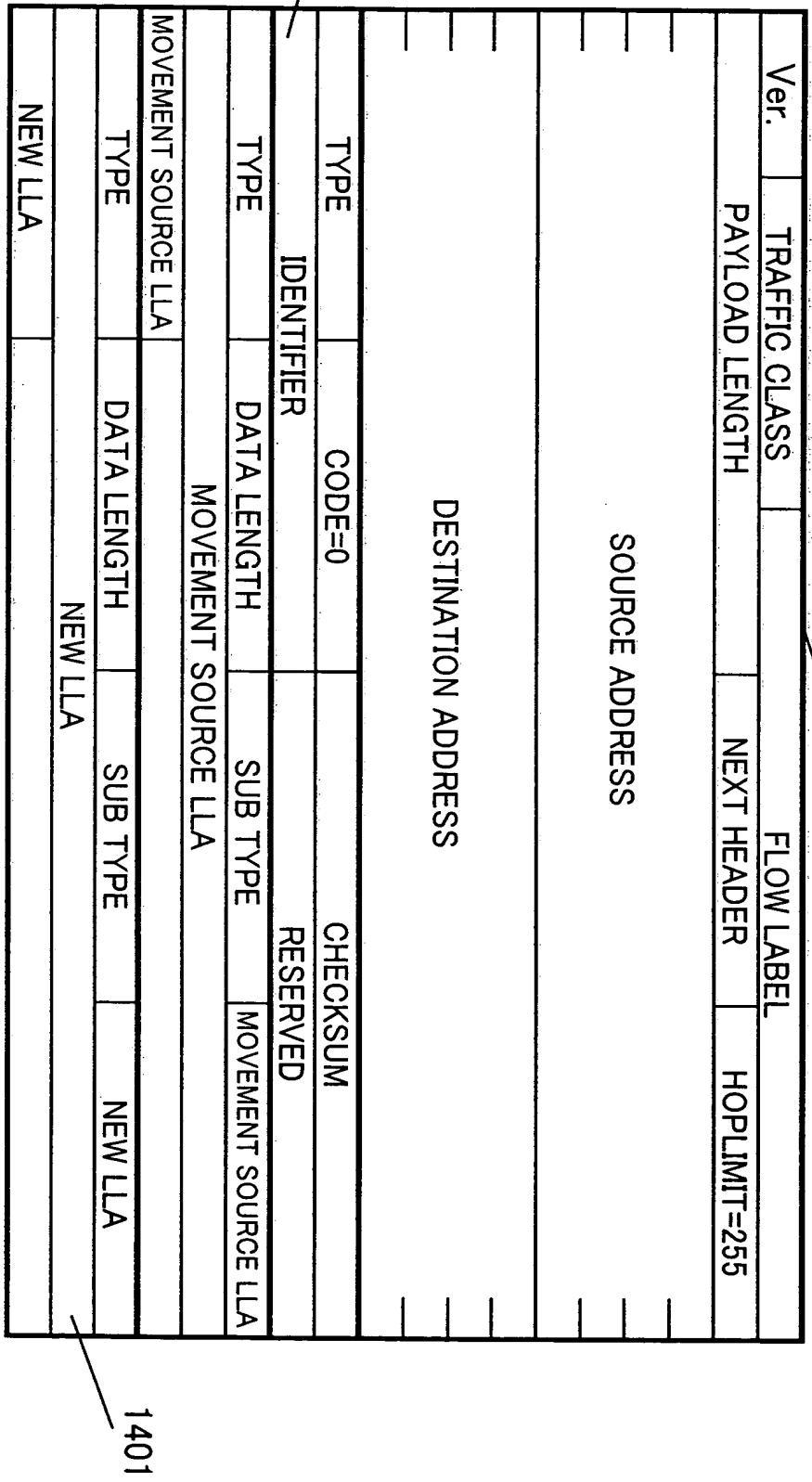

Ver.
TRAFFIC CLASS
FLOW LABEL
PAYLOAD LENGTH
NEXT HEADER
HOPLIMIT=255
SOURCE ADDRESS
DESTINATION ADDRESS
TYPE
CODE=0
CHECKSUM
IDENTIFIER
TYPE
DATA LENGTH
SUB TYPE
RESERVED
MOVEMENT SOURCE LLA
MOVEMENT SOURCE LLA
TYPE
DATA LENGTH
SUB TYPE
NEW LLA
NEW LLA
1400
1401
1402

FIG.28

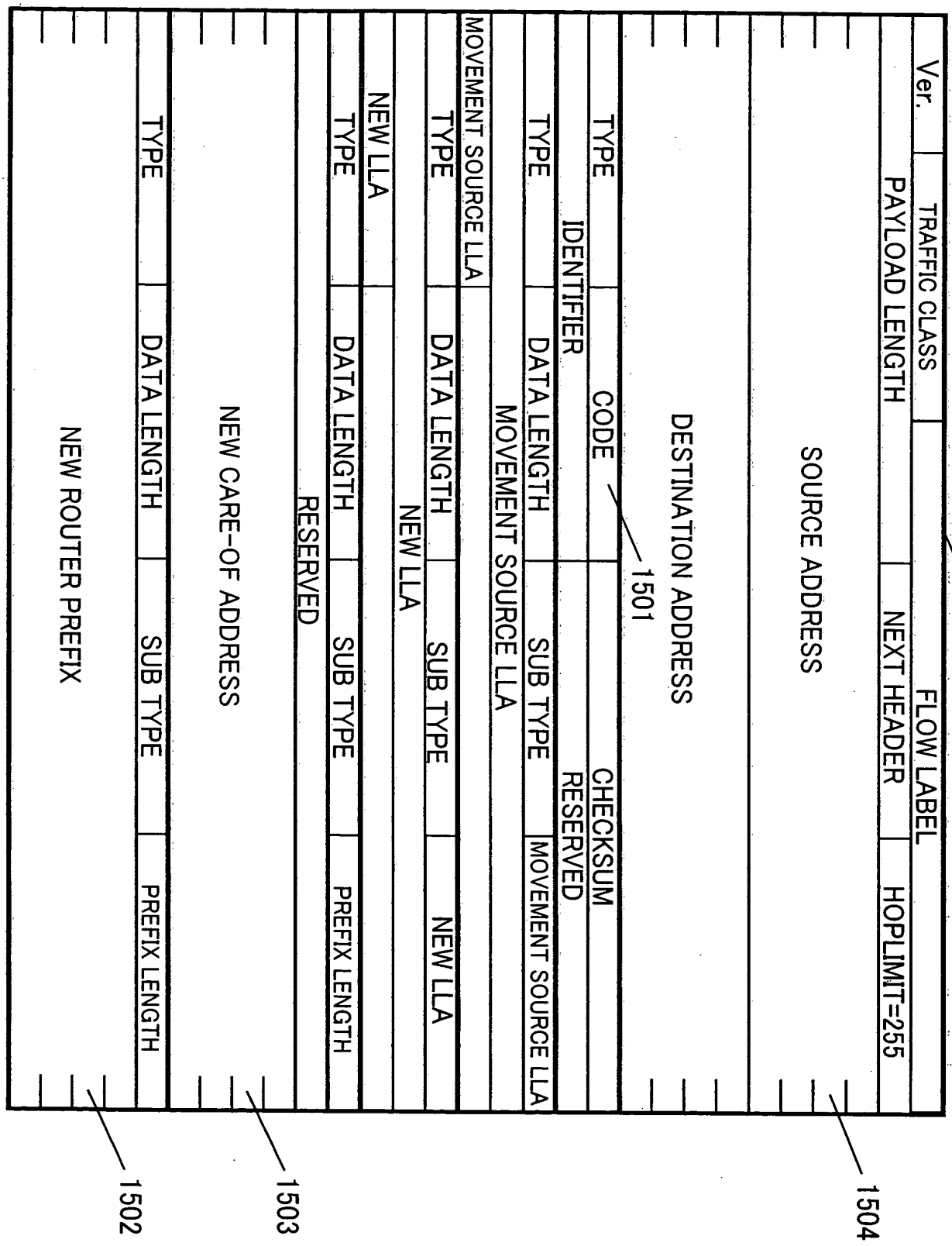

Ver.
TRAFFIC CLASS
FLOW LABEL
PAYLOAD LENGTH
NEXT HEADER
HOPLIMIT=255
SOURCE ADDRESS
DESTINATION ADDRESS
TYPE
CODE
CHECKSUM
IDENTIFIER
RESERVED
TYPE
DATA LENGTH
SUB TYPE
MOVEMENT SOURCE LLA
MOVEMENT SOURCE LLA
TYPE
DATA LENGTH
SUB TYPE
NEW LLA
NEW LLA
NEW LLA
TYPE
DATA LENGTH
SUB TYPE
PREFIX LENGTH
RESERVED
NEW CARE-OF ADDRESS
TYPE
DATA LENGTH
SUB TYPE
PREFIX LENGTH
NEW ROUTER PREFIX
1500
1501
1502
1503
1504

FIG.29

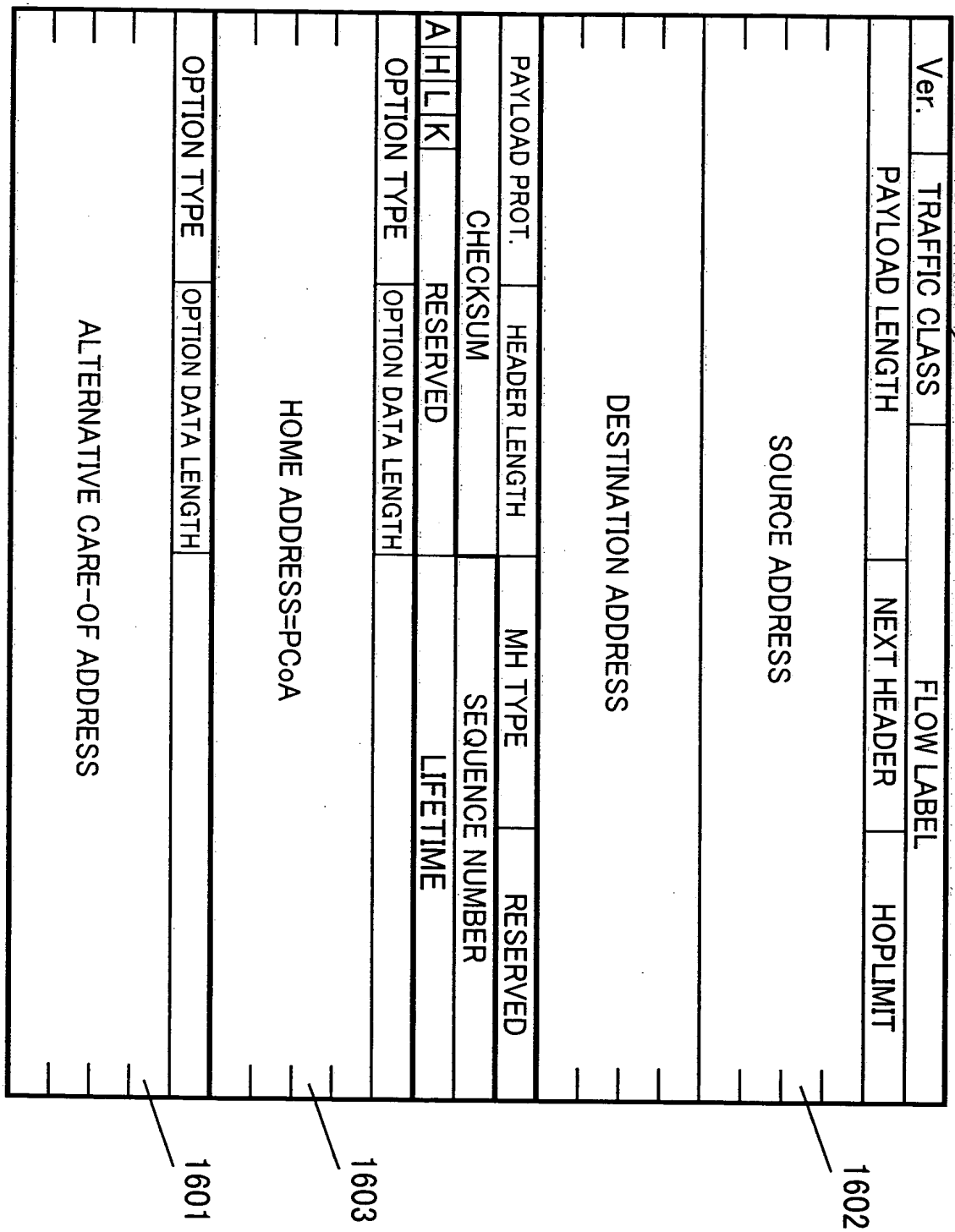

Ver.
TRAFFIC CLASS
FLOW LABEL
PAYLOAD LENGTH
NEXT HEADER
HOPLIMIT
SOURCE ADDRESS
DESTINATION ADDRESS
PAYLOAD PROT.
HEADER LENGTH
MH TYPE
RESERVED
CHECKSUM
SEQUENCE NUMBER
A H L K
RESERVED
LIFETIME
OPTION TYPE
OPTION DATA LENGTH
HOME ADDRESS=PCoA
OPTION TYPE
OPTION DATA LENGTH
ALTERNATIVE CARE-OF ADDRESS
1600
1602
1603
1601

FIG.30

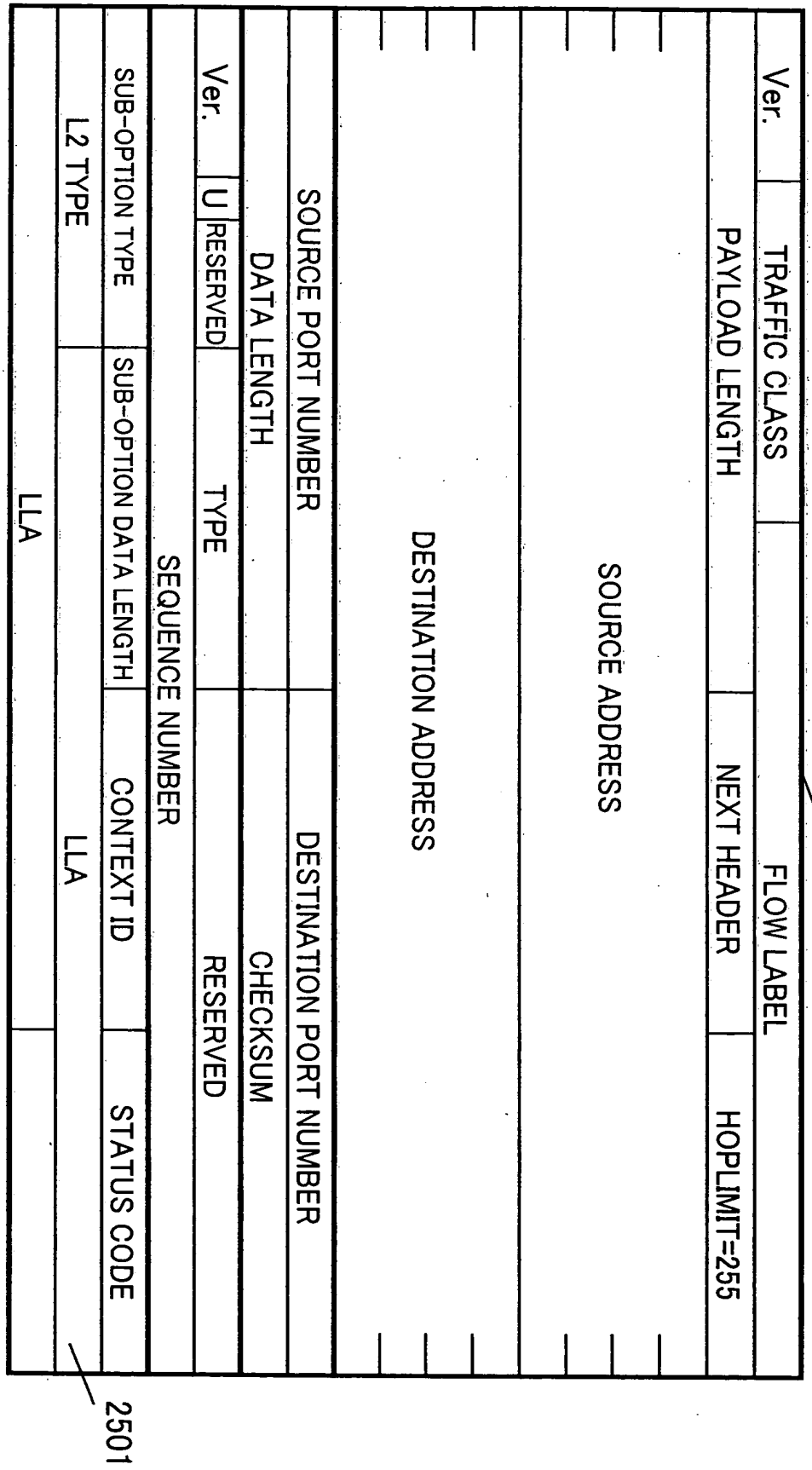

Ver.
TRAFFIC CLASS
FLOW LABEL
PAYLOAD LENGTH
NEXT HEADER
HOPLIMIT=255
SOURCE ADDRESS
DESTINATION ADDRESS
SOURCE PORT NUMBER
DESTINATION PORT NUMBER
DATA LENGTH
CHECKSUM
Ver.
U
RESERVED
TYPE
RESERVED
SEQUENCE NUMBER
SUB-OPTION TYPE
SUB-OPTION DATA LENGTH
CONTEXT ID
STATUS CODE
L2 TYPE
LLA
LLA
2500
2501

FIG.31

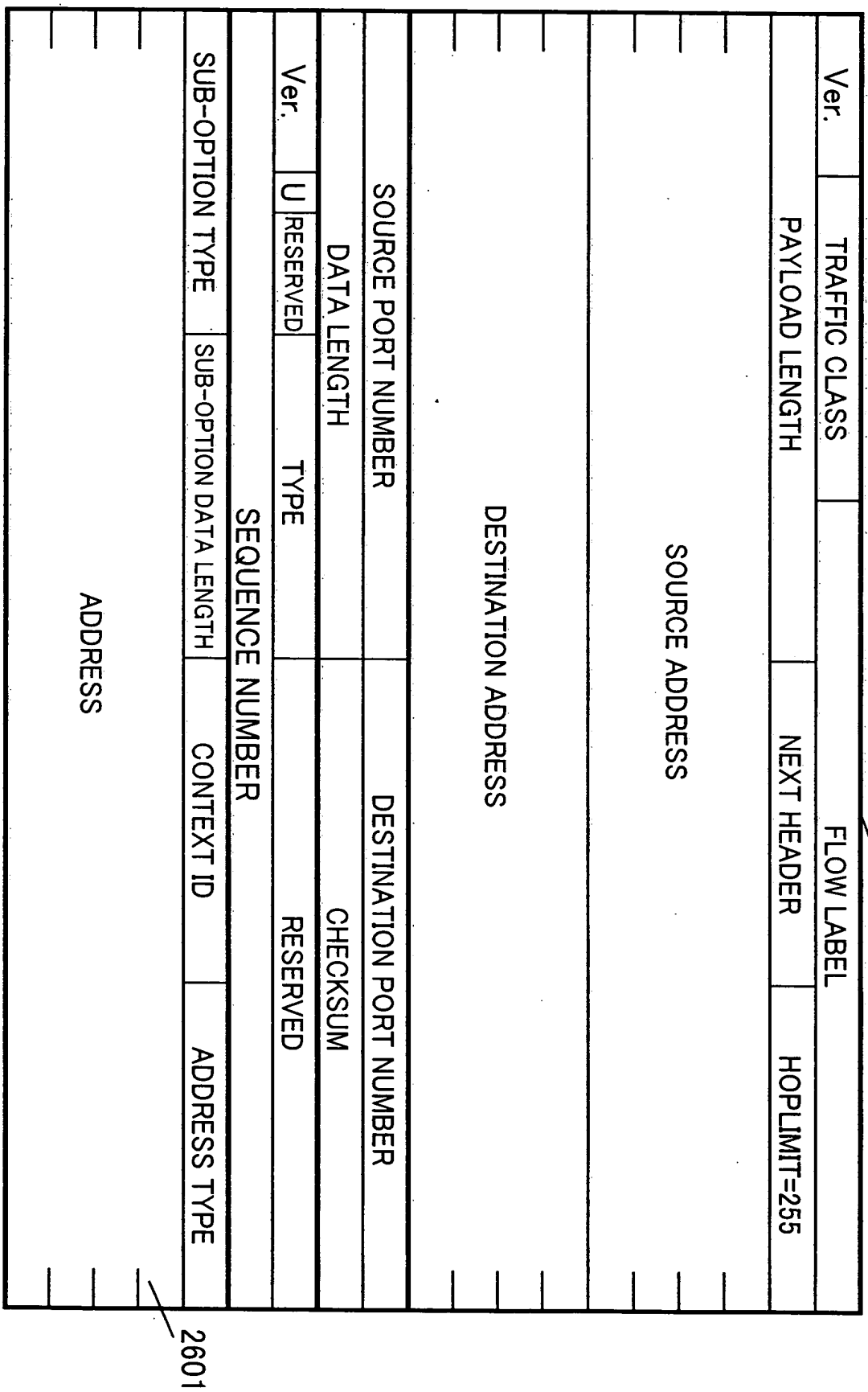

Ver.
TRAFFIC CLASS
FLOW LABEL
PAYLOAD LENGTH
NEXT HEADER
HOPLIMIT=255
SOURCE ADDRESS
DESTINATION ADDRESS
SOURCE PORT NUMBER
DESTINATION PORT NUMBER
DATA LENGTH
CHECKSUM
Ver.
U
RESERVED
TYPE
RESERVED
SEQUENCE NUMBER
SUB-OPTION TYPE
SUB-OPTION DATA LENGTH
CONTEXT ID
ADDRESS TYPE
ADDRESS
2600
2601

FIG.32

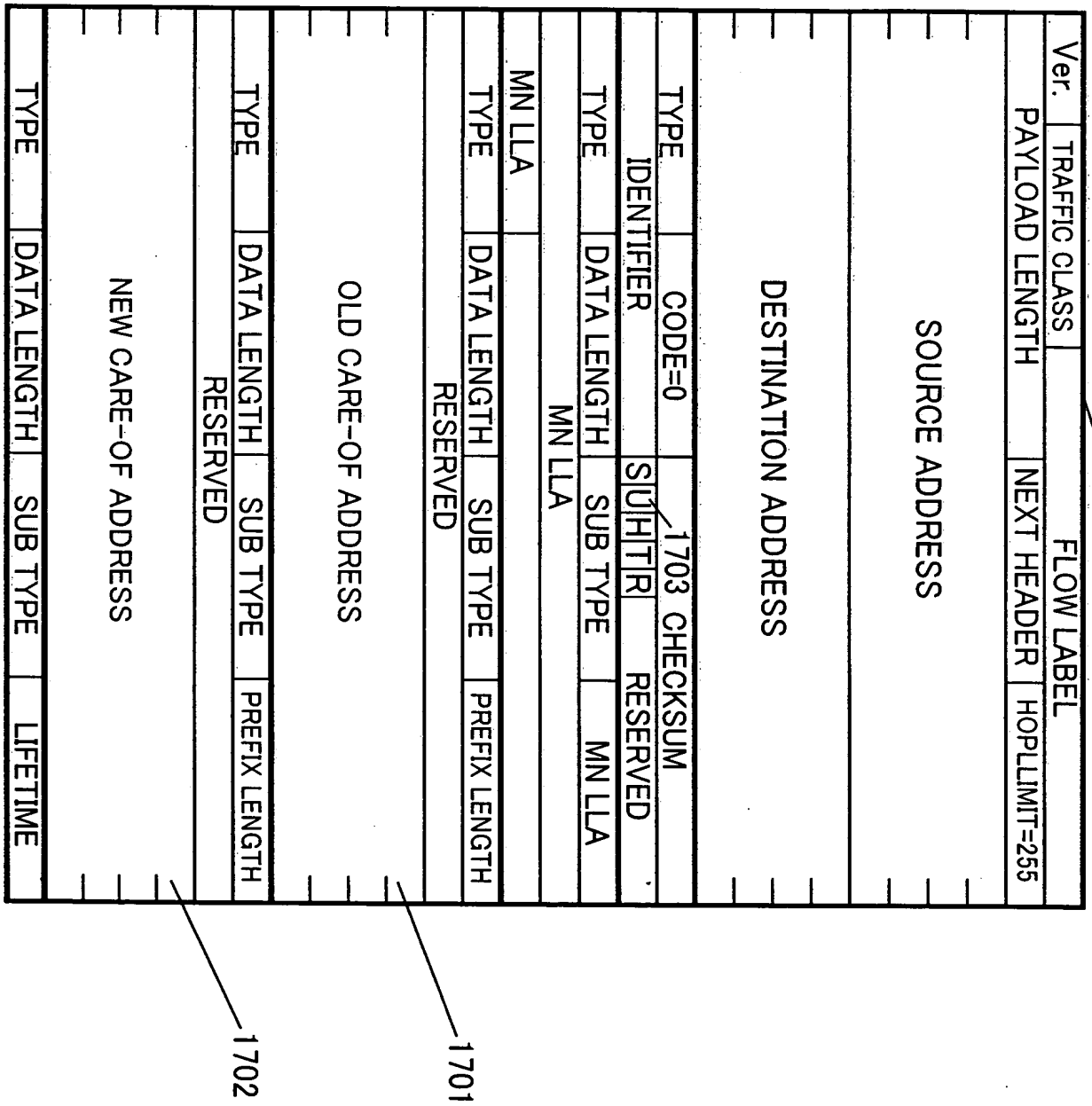

1700
Ver.
TRAFFIC CLASS
FLOW LABEL
PAYLOAD LENGTH
NEXT HEADER
HOPLLIMIT=255
SOURCE ADDRESS
DESTINATION ADDRESS
TYPE
CODE=0
1703 CHECKSUM
IDENTIFIER
S U H T R
RESERVED
TYPE
DATA LENGTH
SUB TYPE
MN LLA
MN LLA
MN LLA
TYPE
DATA LENGTH
SUB TYPE
PREFIX LENGTH
RESERVED
OLD CARE-OF ADDRESS
TYPE
DATA LENGTH
SUB TYPE
PREFIX LENGTH
RESERVED
NEW CARE-OF ADDRESS
TYPE
DATA LENGTH
SUB TYPE
LIFETIME
1701
1702

FIG.33

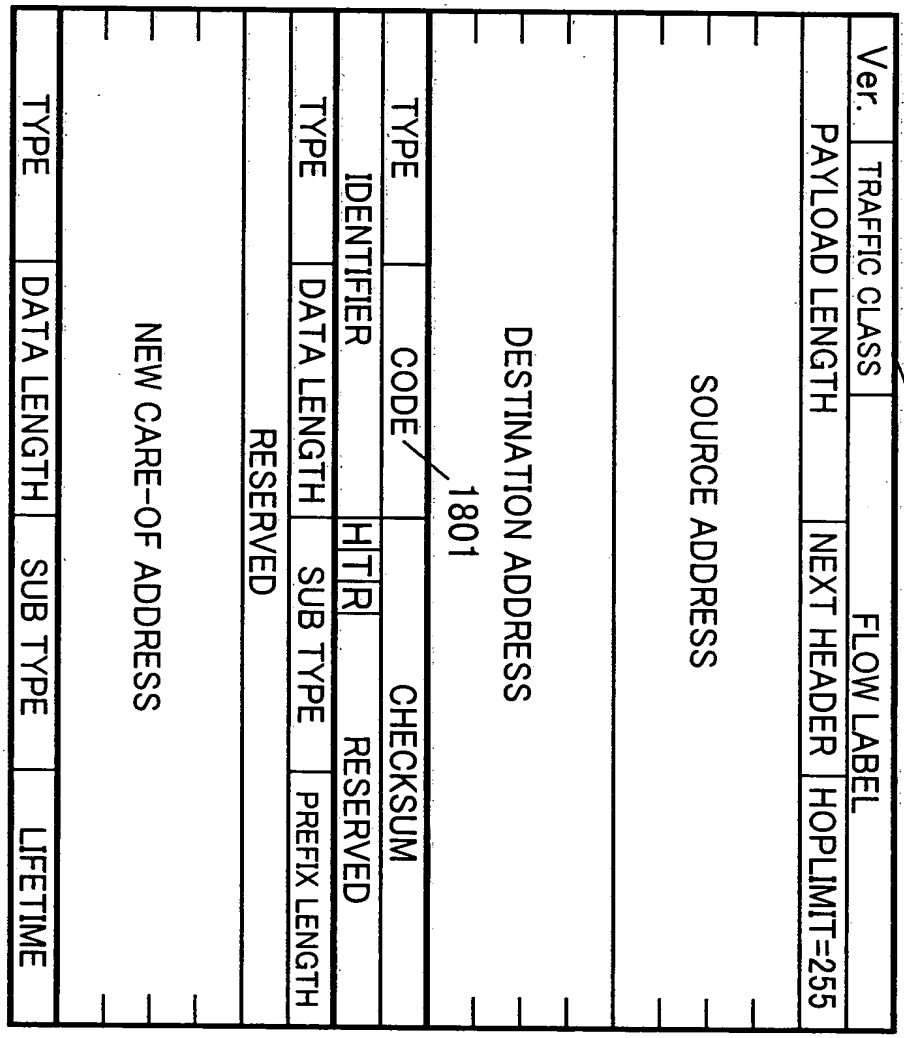

1800
Ver.
TRAFFIC CLASS
FLOW LABEL
PAYLOAD LENGTH
NEXT HEADER
HOPLIMIT=255
SOURCE ADDRESS
DESTINATION ADDRESS
1801
TYPE
CODE
CHECKSUM
IDENTIFIER
H
T
R
RESERVED
TYPE
DATA LENGTH
SUB TYPE
PREFIX LENGTH
RESERVED
NEW CARE-OF ADDRESS
TYPE
DATA LENGTH
SUB TYPE
LIFETIME

FIG.34

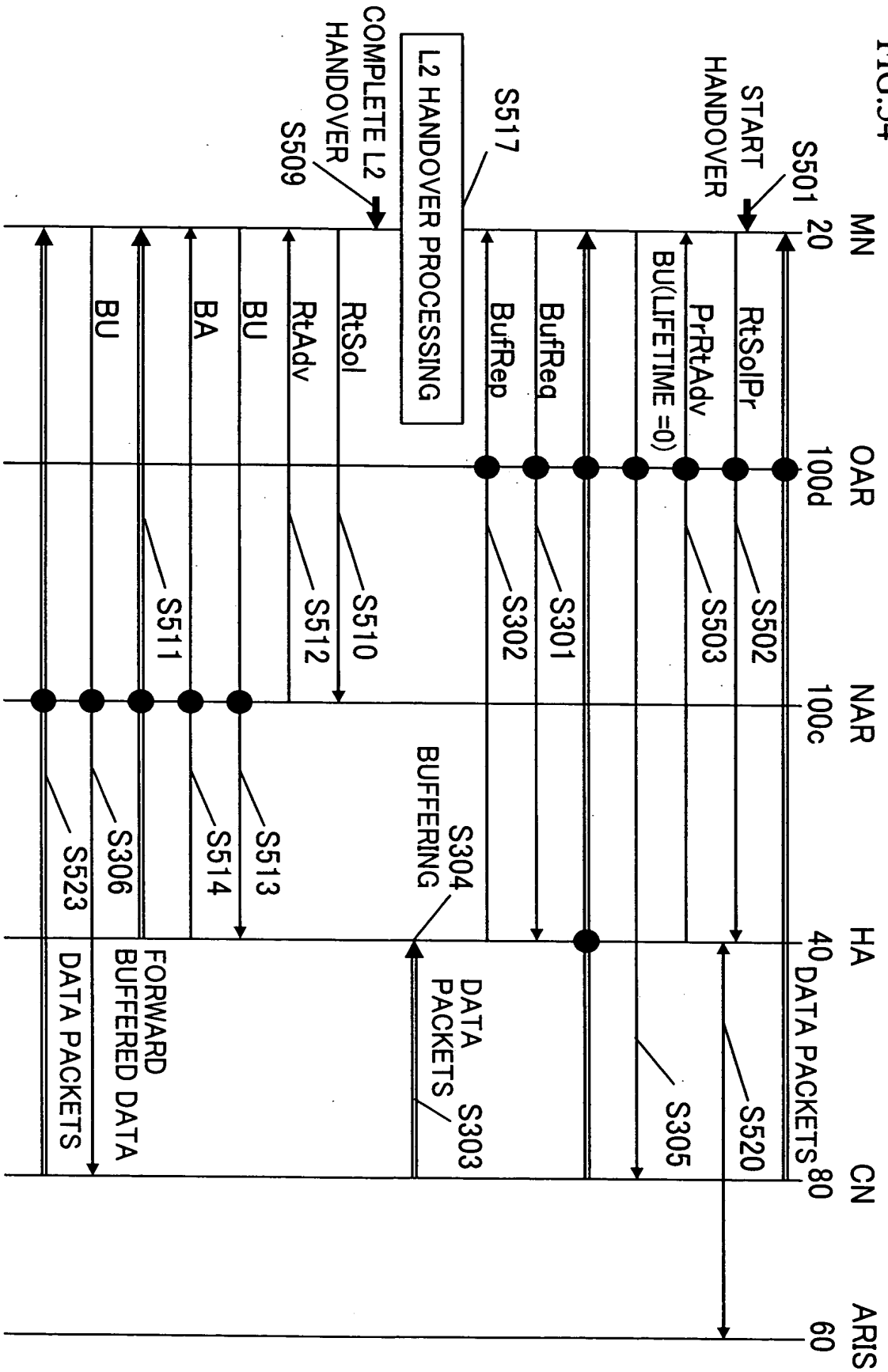

MN
OAR
NAR
HA
CN
ARIS
20
100d
100c
40
80
60
S501
START HANDOVER
RtSolPr
S502
PrRtAdv
S503
BU(LIFETIME =0)
S305
S520
DATA PACKETS
S517
BufReq
S301
BufRep
S302
L2 HANDOVER PROCESSING
S304
BUFFERING
DATA PACKETS
S303
S509
COMPLETE L2 HANDOVER
RtSol
S510
RtAdv
S512
BU
S513
BA
S514
BU
S511
BU
S306
FORWARD BUFFERED DATA
S523
DATA PACKETS

FIG.35

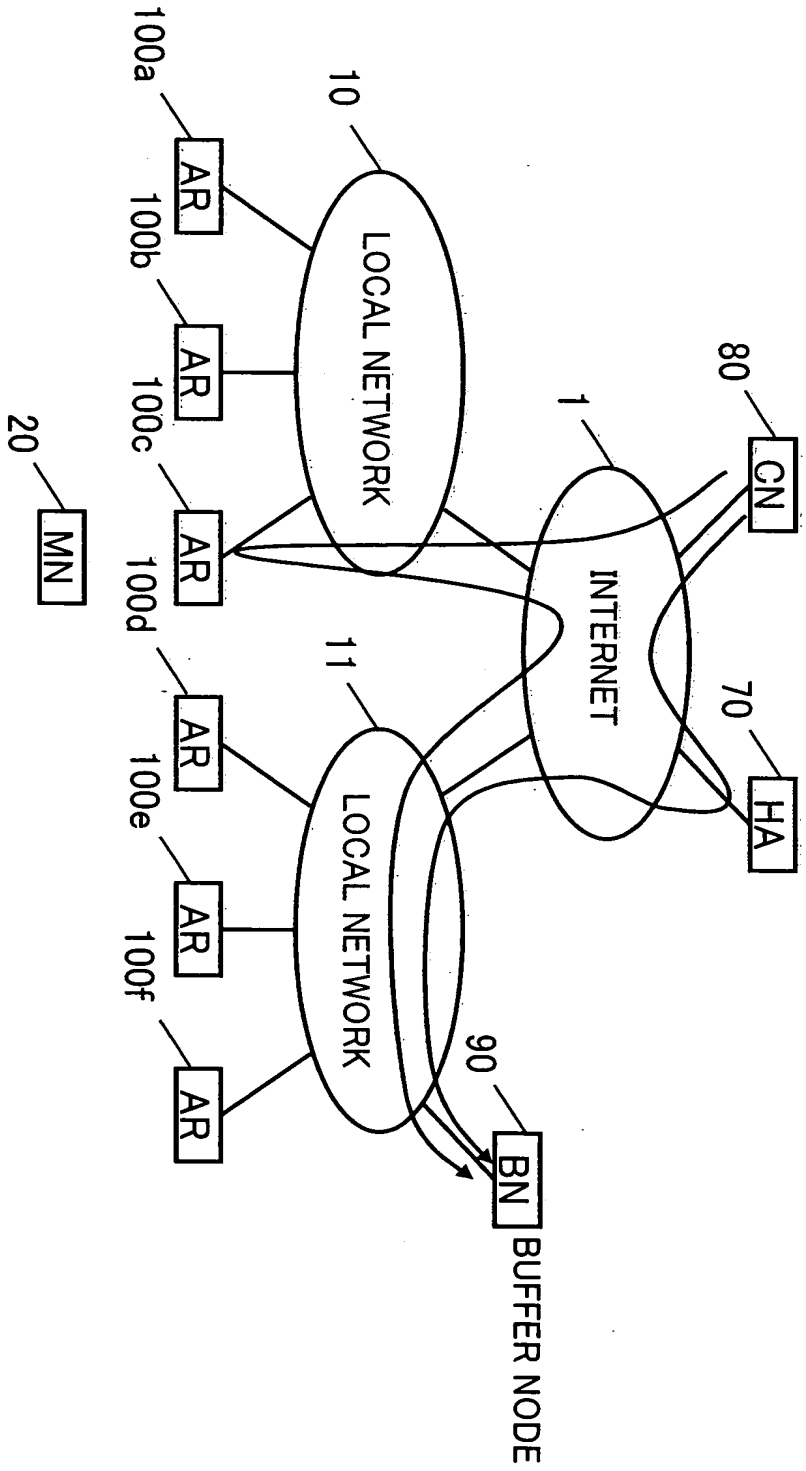

100a
10
AR
100b
AR
100c
AR
LOCAL NETWORK
20
MN
80
CN
1
INTERNET
70
HA
100d
11
AR
100e
AR
100f
AR
LOCAL NETWORK
90
BN
BUFFER NODE

FIG.36

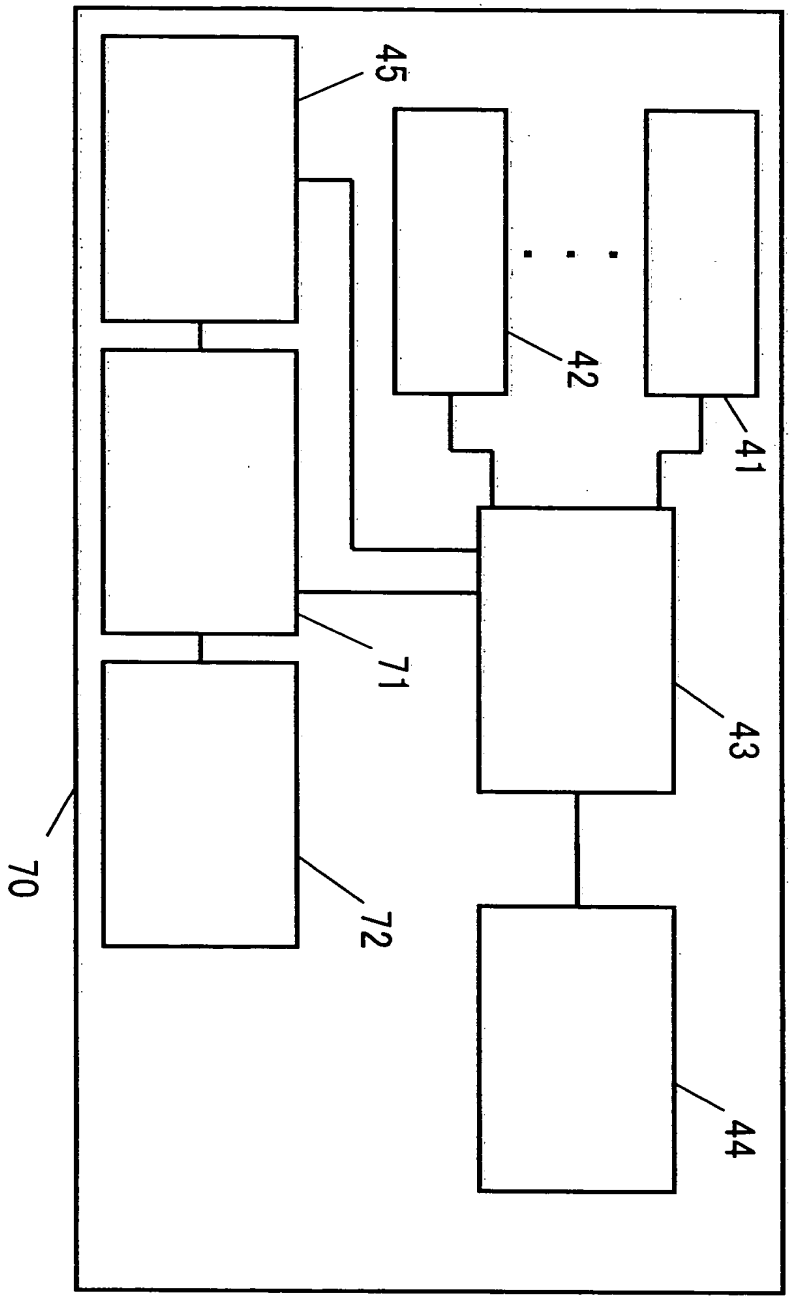


FIG. 37

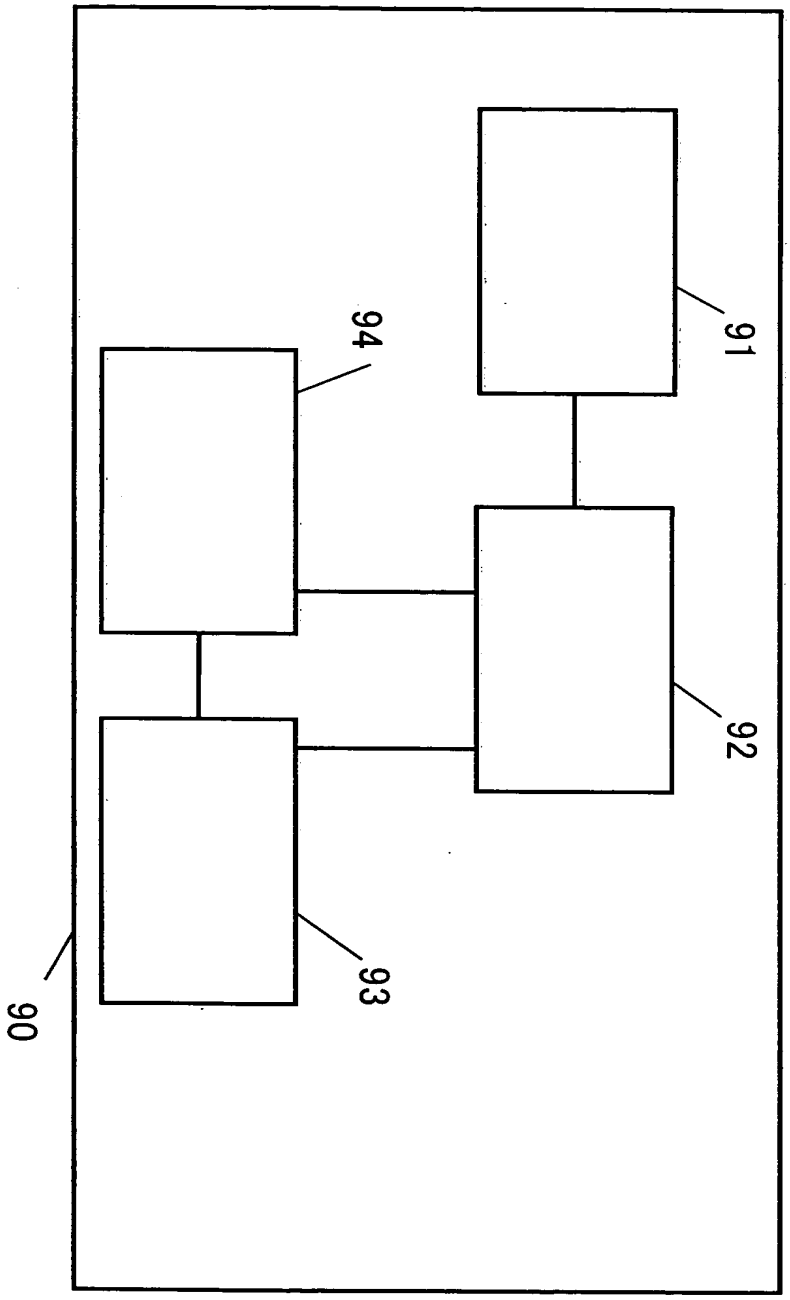


FIG. 38

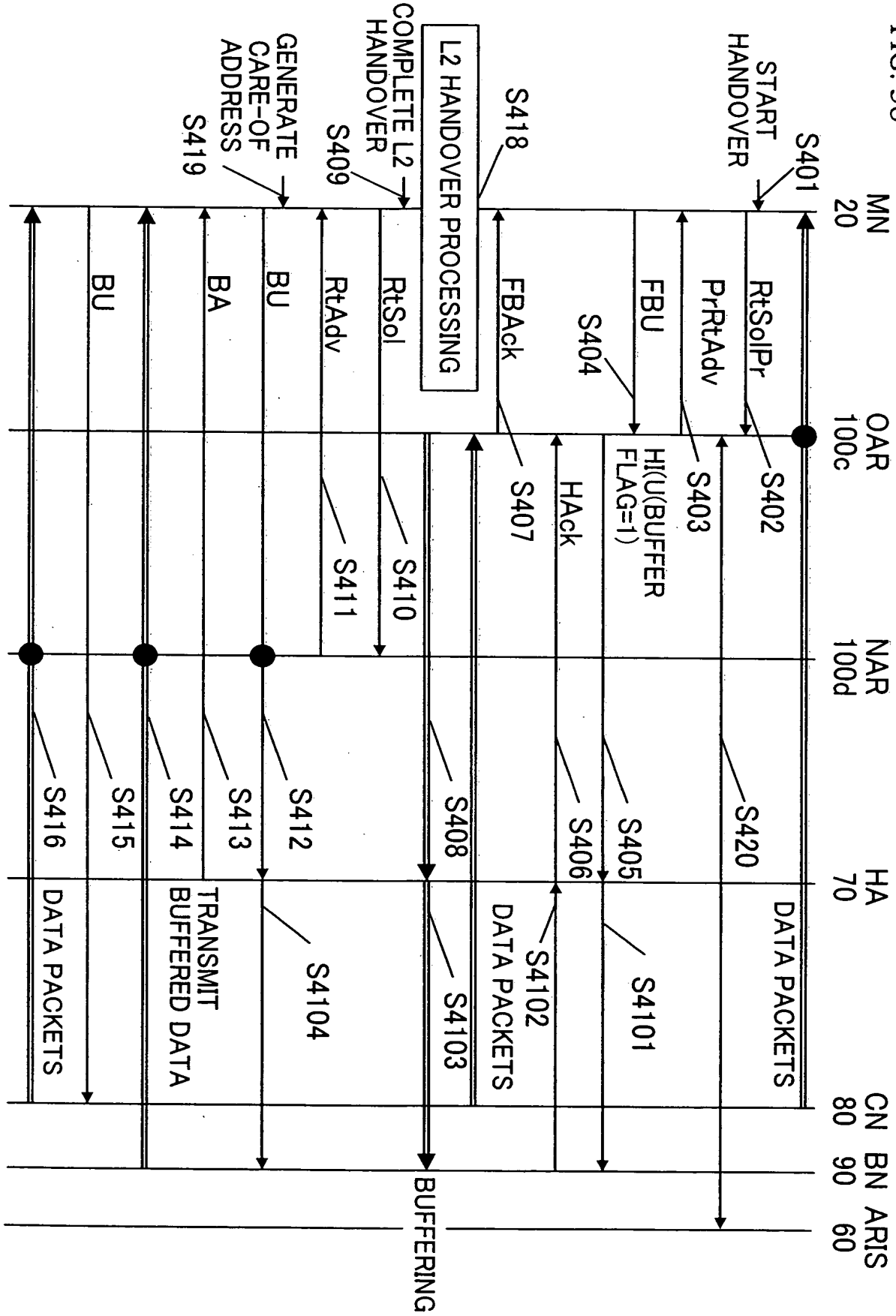

MN 20
OAR 100c
NAR 100d
HA 70
CN 80
BN 90
ARIS 60
START HANDOVER
S401
RtSolPr
S402
PrRtAdv
S403
FBU
S404
HI(U(BUFFER FLAG=1)
HAck
S405
S406
S4101
DATA PACKETS
S420
S418
L2 HANDOVER PROCESSING
FBAck
S407
S408
S4102
DATA PACKETS
S4103
BUFFERING
COMPLETE L2 HANDOVER
S409
RtSol
S410
RtAdv
S411
BU
S412
S4104
GENERATE CARE-OF ADDRESS
S419
BA
S413
TRANSMIT BUFFERED DATA
S414
BU
S415
DATA PACKETS
S416

FIG. 39

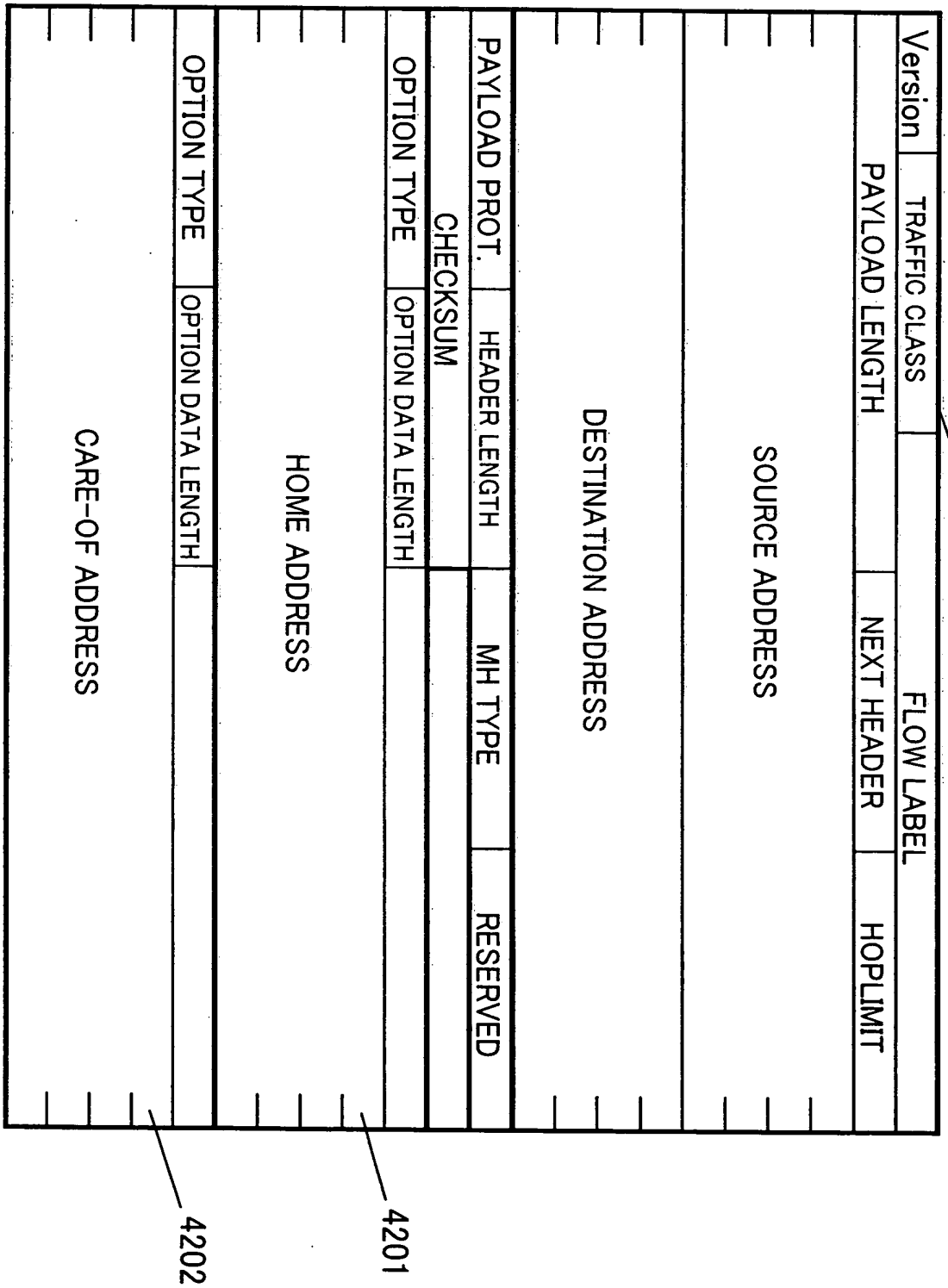
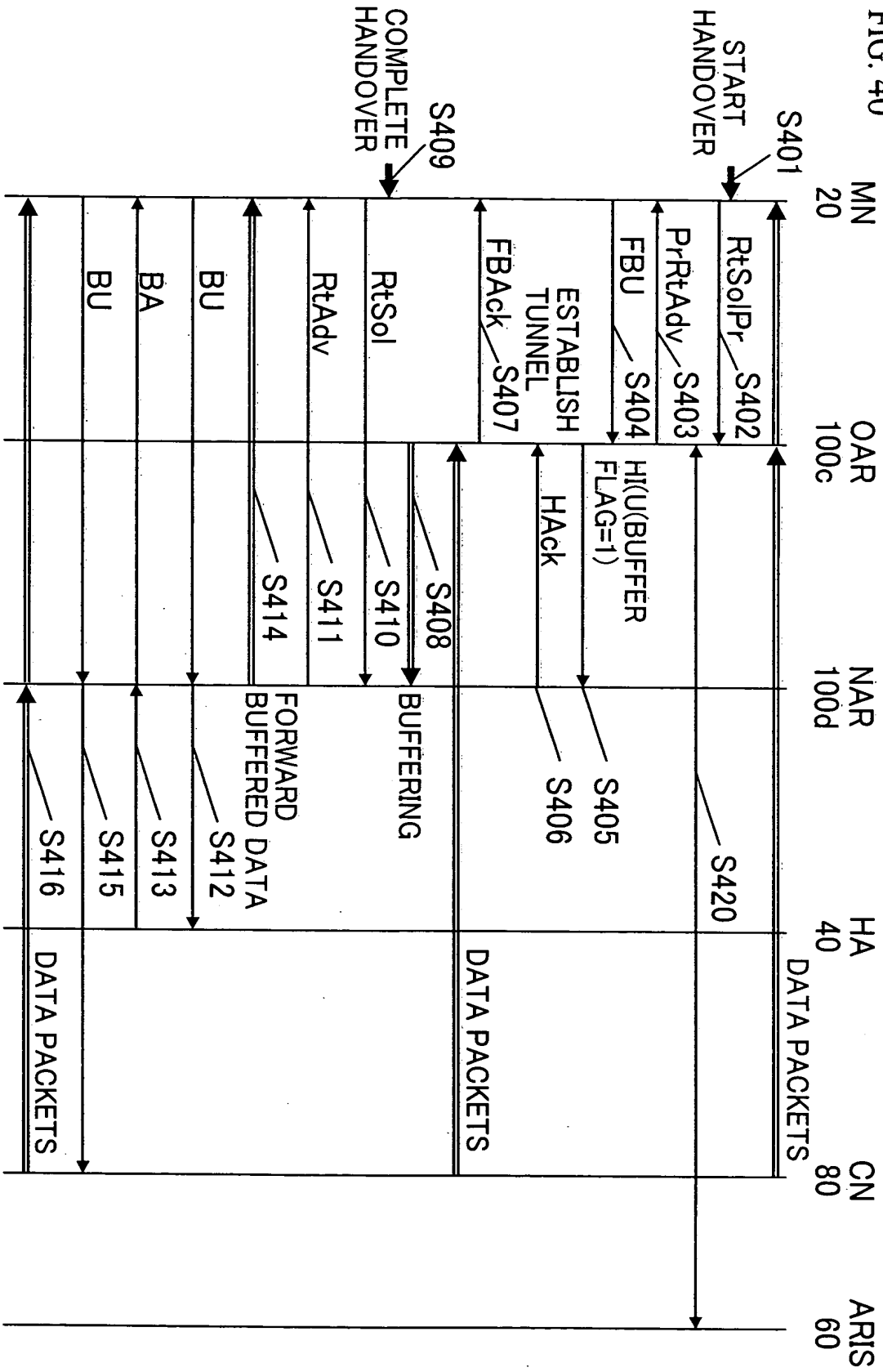

Version
TRAFFIC CLASS
FLOW LABEL
PAYLOAD LENGTH
NEXT HEADER
HOPLIMIT
SOURCE ADDRESS
DESTINATION ADDRESS
PAYLOAD PROT.
HEADER LENGTH
MH TYPE
RESERVED
CHECKSUM
OPTION TYPE
OPTION DATA LENGTH
HOME ADDRESS
OPTION TYPE
OPTION DATA LENGTH
CARE-OF ADDRESS
4200
4201
4202

FIG. 40


MN 20
OAR 100c
NAR 100d
HA 40
CN 80
ARIS 60
START HANDOVER
S401
RtSolPr
S402
PrRtAdv
S403
FBU
S404
ESTABLISH TUNNEL
FBAck
S407
COMPLETE HANDOVER
S409
RtSol
RtAdv
BU
BA
BU
HI(U(BUFFER FLAG=1)
HAck
S405
S406
S408
S410
S411
S414
BUFFERING
FORWARD BUFFERED DATA
S412
S413
S415
S416
S420
DATA PACKETS
DATA PACKETS
DATA PACKETS

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24 upper layer processing part

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26 Fast Mobile IP control part

27 Fast Mobile IP compliance determining part

28 access router searching part

40, 70 home agent apparatus

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47 buffer memory

48 movement-destination access router searching part

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50 access router information list

60 access router information server list

61, 62 lower layer processing part

63 IP processing part

64 upper layer processing part

65 access router information list

66 access router information searching part

67 access router information notifying part

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80 correspondent node

90 buffer node

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92 IP processing part

93 buffer memory

94 buffer management part

100a to 100f access router apparatus